FACTORS INFLUENCING FINANCIAL STABILITY: A COMPARATIVE STUDY BETWEEN CONVENTIONAL BANKS AND ISLAMIC BANKS IN MALAYSIA

By

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ABSTRACT

Financial stability is very crucial for every financial institutions as it will bring public trust and confidence in the whole system and at the same time contribute for a healthy and well-functioning economy of a country. Hence, financial institutions including banks need to maintain their financial soundness and stability as they play an important role in the economy. Thus, this study was conducted to examine the influence of bank-specific variables and macroeconomic factors such as Liquidity Ratio (LIQR), Profitability (PROFIT), Asset Quality Ratio (AQR), Capital Ratio (CAP), Gross Domestic Product (GDP), Inflation Rate (INF), Unemployment Rate (UNR), and Money Supply (M2) on the Financial Stability of Islamic banks and Conventional banks in Malaysia. By using E-Views 8 software, the data obtained from the year 2009 until 2017 then is evaluated and interpreted. The Multiple Regression Analysis was conducted in order to examine the factors that influencing the financial stability of the banks in Malaysia. The findings from this study revealed that only two variables were found to be significant with the financial stability of Islamic banks which are CAP and GDP. While there are six variables were found to be significant with the financial stability of Conventional banks which are PROFIT, AQR, CAP, GDP, INF and UNR. From these results, it was proved that Islamic banks are able to withstand from economy crisis as INF, UNR and M2 were found not significant with financial stability of Islamic banks. Meanwhile, conventional banks are highly affected with economy crisis since GDP, INF and UNR were found to be significant with its financial stability.

Keyword: financial stability, Islamic banks, conventional banks, Z-score

ABSTRAK

Kestabilan kewangan adalah amat penting untuk semua institusi kewangan kerana ia memberikan kepercayaan dan keyakinan orang awam untuk seluruh sistem dan pada masa yang sama mampu menyumbangkan kepada ekonomi negara yang sihat dan berfungsi dengan baik. Oleh itu, institusi kewangan termasuk bank-bank harus mengekalkan kekukuhan kewangan dan kestabilan kerana mereka memainkan peranan yang penting dalam ekonomi. Dengan itu, kajian ini telah dijalankan untuk memeriksa pengaruh faktor dalaman bank dan faktor makroekonomi seperti nisbah kecairan, keuntungan, nisbah kualiti asset, nisbah modal, KDNK, inflasi, kadar pengangguran, dan bekalan wang terhadap kestabilan kewangan bank-bank Islam dan bank-bank konvensional di Malaysia. Dengan menggunakan perisian E-Views 8, data telah diperoleh dari tahun 2009 ke 2017 dan telah dinilai dan ditafsirkan. Analisa Regresi Pelbagai telah dikendalikan untuk memeriksa faktor-faktor yang mempengaruhi kestabilan kewangan bank-bank di Malaysia. Hasil kajian ini ialah; hanya dua pembolehubah ditemui signifikan terhadap kestabilan kewangan bank-bank Islam di Malaysia iaitu nisbah modal dan KDNK. Manakala, terdapat enam pembolehubah ditemui signifikan terhadap kestabilan wang bank-bank konvensional iaitu keuntungan, kualiti asset, modal, KDNK, inflasi dan kadar pengangguran. Hasil kajian ini dapat membuktikan bahawa bank-bank Islam dapat menahan daripada krisis ekonomi kerana inflasi, kadar pengangguran dan bekalan wang didapati tidak signifikan terhadap kstabilan kewangan bank-bank Islam. Manakala, bank-bank konvensional sangat terkesan dengan krisis ekonomi kerana KDNK, inflasi dan kadar pengangguran didapati signifikan dengan kestabilan kewangan di bank-bank konvensional.

Kata kunci: kestabilan kewangan, bank-bank Islam, bank-bank konvensional, Z-skor

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
AQR	Asset Quality Ratio
BIMB	Bank Islam Malaysia Berhad
BMMB	Bank Muamalat Malaysia Berhad
BNM	Bank Negara Malaysia
CAP	Capital Ratio
CIMB	Commerce International Merchant Bankers
CPI	Consumer Price Index
FEM	Fixed Effect Model
FS	Financial Stability
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GLS	Generalized Least Square
IFSB	Islamic Financial Services Board
INF	Inflation Rate
LIQR	Liquidity Ratio
M2	Money Supply
MENA	Middle East and North America
NEAC	The National Economic Action Council Ministry of Finance
NPL	Non-Performing Loans
OLS	Ordinary Least Square
PLS	Profit-Loss Sharing
PROFIT	Profitability

RAM	Rating Agency Malaysia
REM	Random Effect Model
ROA	Return on Asset
SEA	South East Asia
UNR	Unemployment Rate
VIF	Variance Inflation Factor

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This study is focusing on relationship between internal and external factors with the financial stability of Islamic and conventional banks in Malaysia. In this chapter, background of study and the problem statement will be discussed. The research questions, research objectives, contribution and limitation of the study will be discussed. Background of the study will be covered in Section 1.1, the issue of the study will be covered in Section 1.2, and the research questions and research objectives will be covered in Section 1.3 and Section 1.4, respectively.

1.1 Background of the Study

Financial stability can be defined as obtaining the public trust and confidence in financial institutions, infrastructure, market and the system as a whole. It is very crucial in order to have a healthy and better economy (Ullah, Saddozai, Hussain, & Rehman, 2017). Bank Negara Malaysia (BNM) also describes financial stability plays a vital part in the economy since every financial institutions need facilitate a proficient circulation of the financial funds between savers and borrowers. By achieving this, banks are able to gain consumers' confidence and contributes towards economic growth and development (Bank Negara Malaysia, 2019).

Furthermore, bank stability could be describe as when there is any unfavourable economic crisis and financial shocks, the banks has the capacity to endure the situation and at the same time could meet their financial obligations deprived of internal and external factors (Miah & Uddin, 2017). The stability of Islamic and conventional banks could be in contrast due to their different nature of the business practices. In conventional banks, there is an existence of two major features related to their business practices, which are interest and uncertainty. Unlike Islamic banks, business practices are not allowed to engage with interest and uncertainty. As an alternative, Islamic banks offer numerous financial products that is in accordance with *Shariah* principles. For instance, *Mudarabah* (profit sharing contract) and *Musharakah* (Profit loss sharing contract/joint venture) which are truly based on PLS model (Miah & Uddin, 2017). Operating under PLS model, the integration of asset and liabilities in Islamic banks allows the banks to share the profit and losses with borrowers and also with the depositors (Chong & Liu, 2009).

Ever since 2007 global financial crisis, the Islamic banking system has received attention as the Islamic banking system has not highly affected by the economy crisis. This also highlighted the strong point of the Islamic banking system compared to its conventional counterparts. Hence, the financial stability of banks has been one of the huge concerns in making an economic strategy especially for a developed and emerging country (Alqahtani & Mayes, 2010). This is because when there is a condition of financial instability or financial crisis, it could relate with lack of stability. There was one evidence in the United States, where US bank Lehman Brothers declared bankrupt

during the financial crisis in the United States in 2008. This incident has caused most of the banks in the United States and Europe to be affected by this (Rahim, Hassan, & Zakaria, 2012).

Due to the huge attention towards Islamic banking system and its stability, it could be another alternate option to the current interest-based banking system. Nevertheless, since there was lack of studies on Islamic banks stability, there should be further research in wider range and in depth to investigate the issues surrounding Islamic banks stability. It aims to contribute to the literature of Islamic banks stability and also the internal and external factors influencing the stability of banks. Malaysia is the most suitable example to be chosen in this study as the country is implementing a dual-banking system and still manage to strengthen its position as a world Islamic financial hub.

The Malaysian banking industry has been practicing two mode of banking system which consists of conventional banking and Islamic banking as this structure turned out to be the most effective system to be applied in this country's banking industry (Central Banking, 2001). Even though the conventional banks have been established a long time before the Islamic banks, it does not significantly affect the operations of both banks as it gives good effects to both banks in order to make a good and healthy competition among both banks. In Malaysia, we can see that even conventional banks are permissible to have subsidiaries of Islamic banks by offering Islamic banking products and services alongside their own conventional products. This dual banking system is currently able to

contribute to the stability are because of the bank's strong capital and stable funding levels.

According to RAM Rating Services Bhd., Islamic financing recorded good growth of 10.3% in 2017 and was ahead of conventional banks' 1.7% growth in the same year (RAM Rating Services Bhd, 2018). This marks that Islamic banks are growing rapidly in the banking industry to cater the basic needs of Muslims by providing *Shariah* compliant products. The main difference between Islamic and conventional banking is interest or *riba* as it is firmly forbidden in Islam. In the Quran, it was mentioned that "profit must be earned from the exchange of goods and service but not from the exchange of money itself". Surah *al-Baqarah* verses 275 also mentioned, "Allah has allowed trade and had forbidden interest." Islamic banks in Malaysia started in 1983 and some of the conventional banks are also allowed to have their own Islamic bank subsidiaries or Islamic windows to operate their business by offering *Shariah* compliant products and services.

Malaysia is one of the leading country for the Islamic financial industry by offering wide range products and services to cater clients' need locally and internationally. According to Bank Negara Malaysia, there is a number of 16 Islamic banks and 27 conventional banks in Malaysia (Bank Negara Malaysia, 2019). Moreover, in order to stimulate the growth of the financial industry, the Malaysian government has implemented various strategies to enhance the savings, investments, and others. There are also more

researchers started to execute their study to find out factors influencing the financial stability of both conventional banks and Islamic banks in several countries. This is because banks play a main part as financial intermediaries and to promote a better, developed and more stable economy of a country.

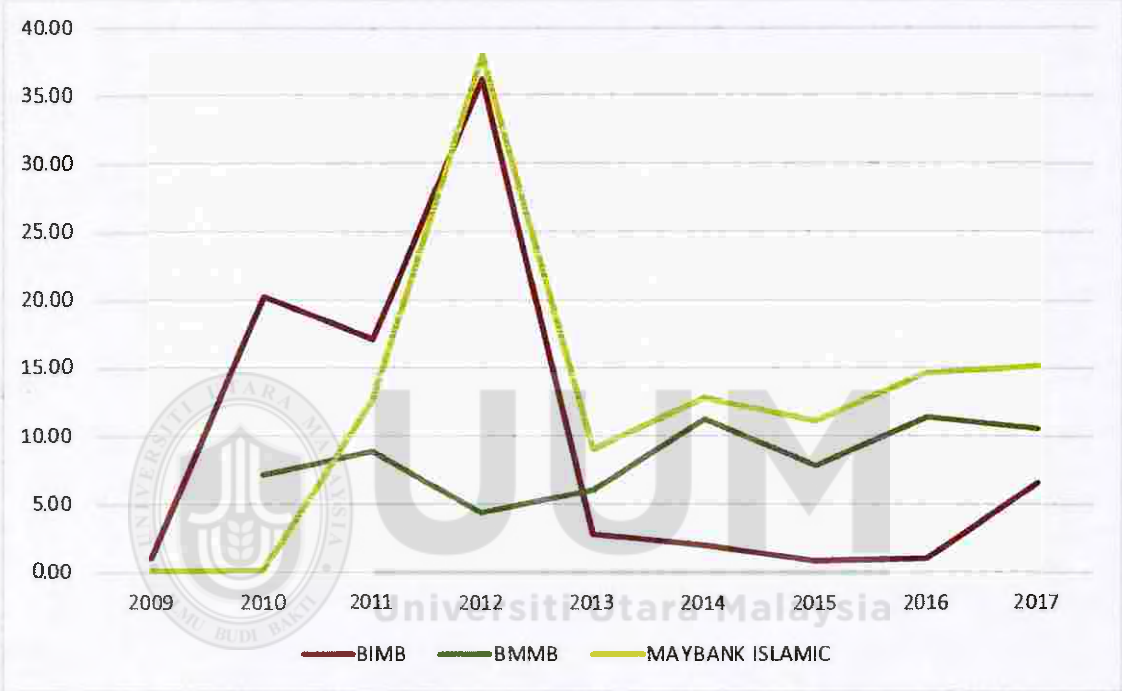

Figure 1.1

Liquidity Ratio for Islamic banks in Malaysia

Source: FitchConnect database, 2018

Financial stability also can be measured by liquidity ratio as an indication of the ability of the banks to meet its obligations and avoiding from any financial distress. Figure 1.1 shows the case of Islamic banks in Malaysia; BIMB which is the premier Islamic bank in Malaysia recorded financial stability recorded financial stability of 1.05 percent for the year 2009, then in the year of 2010 a high liquidity ratio was recorded which is 20.24, then decreased to 17.12 in 2011, in 2012 BIMB recorded its highest financial

stability with 36.12 percent, and the trend has been decreasing ever since. Meanwhile, one of the full-fledged Islamic bank; BMMB recorded financial stability of 7.16 percent for the year 2010, 8.87 percent in 2011, 4.39 percent in 2012 and the highest record is 11.37 percent in 2016. While Maybank Islamic recorded a highest liquidity ratio amongst Islamic banks in Malaysia with the value of 37.90 percent in the year of 2012 from 0.09 percent and 0.16 percent in 2009 and 2010, respectively. Then it drastically decreasing to 9.03 in 2013 and slowly increasing in the following years. On average, after 2013 the financial stability of these Islamic banks in Malaysia showed a declining trend, as it indicates that these Islamic banks bank faced instability in their financial situation.

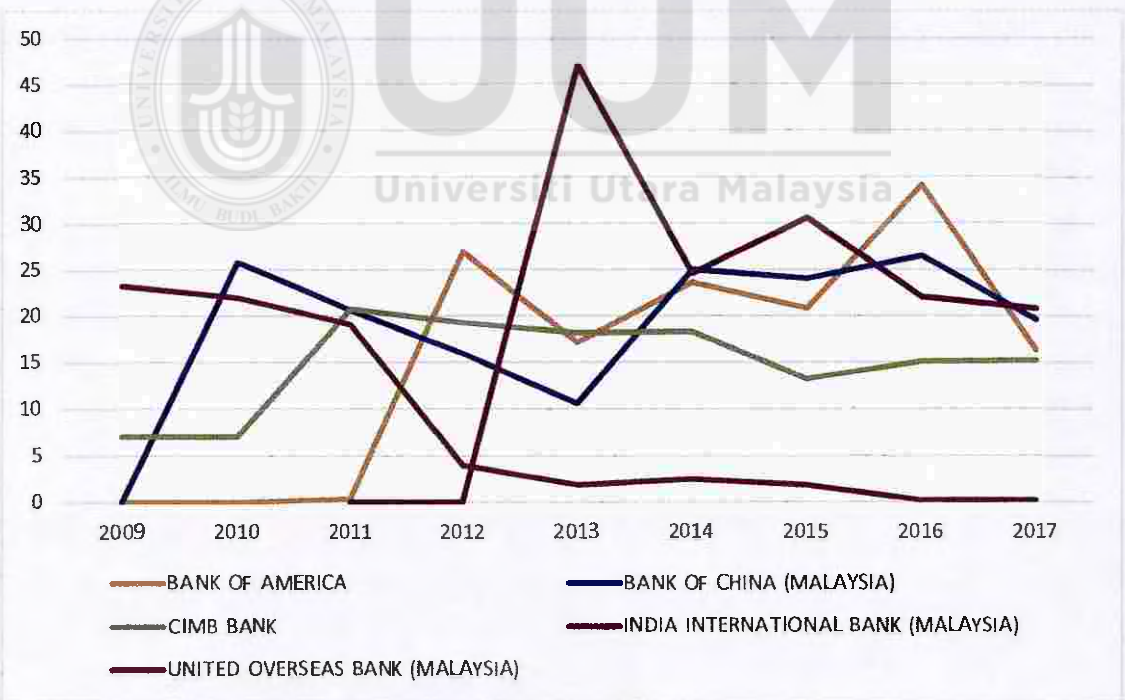

Figure 1.2

Liquidity Ratio for Conventional banks in Malaysia

Source: FitchConnect database, 2018

Figure 1.2 shows the liquidity ratio of conventional banks from 2009 to 2017, India International Bank (Malaysia) has shown a high stability with 47.04 percent in 2013, then decreasing to 24.62 percent in 2014, 30.62 percent in 2015 and has been decreasing in the following years. Meanwhile, CIMB Bank recorded 7.05 percent in 2010, then increased to 20.78 percent in 2011, then the trend showed an instability of this banks in the following year and in 2016 onwards showed a steady growth. Bank of America and Bank of China (Malaysia) were also recorded double digit percentage of financial stability during this period. As for United Overseas Bank (Malaysia) has recorded a lower stability in their financial from 2012 to 2017 as it showed a single digit percentage of liquidity ratio.

1.2 Problem Statement

This study is to analyse the interaction between bank-specific and macroeconomic factors with financial stability in conventional and Islamic banks. Based on the past researchers, this study should be continued since there a lot of different methodologies used in different countries which lead to different findings. In addition, this study is also very important in order to maintain and improve the financial strength of conventional and Islamic banks while still considering the internal and external factors and at the same time able to contribute a better and stable economy.

There were numerous studies on the bank-specific variables and macroeconomic factors with financial stability have been done by previous scholars, such as Rashid, Yousaf, & Khalleequzzaman (2017); Rajhi & A.Hassairi (2013); Miah & Uddin (2017); Ullah, Saddozai, Hussain, & Rehman (2017); Rahim & Zakaria (2012); Hasan & Dridi (2010); Korbi & Bougatef (2017); Abrar, Ahmed, & Kahfi (2018); Santoso, Rum, & Patria (2016); Wahid & Dar (2016); Bourkhis & Nabi (2013). These studies are concentrated towards identifying the factors influence financial stability of Islamic banks and conventional banks.

Since there are different views or arguments from different researchers, there are some unsolved issues regarding to this study. For instance, there are unclear findings on which banks between Islamic banks and conventional banks are more stable. The findings from previous researchers are divided into two (2) groups. The first group which found that Islamic banks have higher stability than conventional banks; Rashid, Yousaf, & Khalleequzzaman (2017); Rajhi & A.Hassairi (2013); Miah & Uddin (2017); Ullah, Saddozai, Hussain, & Rehman (2017); Rahim & Zakaria (2012) and Hasan & Dridi (2010). However in the second group, Korbi & Bougatef (2017); Abrar, Ahmed, & Kahfi (2018); Santoso, Rum, & Patria (2016); Wahid & Dar (2016); Bourkhis & Nabi (2013) and Gamaginta & Rokhim (2009) were found different findings or no major difference in the stability of Islamic and conventional banks which contradicts with the result found in the first group. These findings oppose known belief and theoretical literature which proposes that Islamic banks are having higher stability compared to conventional banks.

Different findings also were found in the relationship between liquidity ratio, profitability, asset quality ratio, capital ratio, gross domestic product (GDP), inflation rate, unemployment rate, and money supply. Where Korbi & Bougatef(2017) and Rajhi & A.Hassairi (2013) found a significant relationship between liquidity ratio and financial stability while Lassoued (2018) found otherwise. As for profitability, it was found that return on asset (ROA) only has an impact on conventional banks whilst has no impacts on Islamic banks Wahid & Dar (2016). In contradicts to the previous result, return on asset (ROA) has a relationship with Islamic banks' stability (Lassoued, 2018). While in the study of Chakroun & Gallali (2015), asset quality ratio only has an influence on financial stability of Islamic banks but no significant difference were found in the study ofBourkhis & Nabi (2013). In addition, the capital ratio impact on financial stability also has unclear evidence where there is no significant difference was found but there is a positive relationship was found in the study of Wahid & Dar (2016).

As for the macroeconomic factors, Rahim, Hassan, & Zakaria (2012), Oduor, Ngoka, & Odongo (2017) found that GDP and inflation rate have an impact on financial stability whereas Dahir & Mahat (2017); Lassoued (2018); Cihak & Hesse (2010) found otherwise. Furthermore, the unemployment rate and money supply have not been widely used as a variable in the previous studies. It can be said that previous studies are less concerned about the relationship between money supply, unemployment rate, and financial stability. These variables are also one of the important factors as it reflects the economic conditions in a country since it could affect the customer's financial situation and the performance of Islamic and conventional banks. There is a limited number of the

previous study that addressed the money supply in their research. Besides, there is a gap in term of assessing the influence of money supply and unemployment rate on the financial stability of Islamic banks and conventional banks operating in Malaysia. There were a study done Oduor, Ngoka, & Odongo (2017) by that examined these factors in Africa where it was found that money supply has a significant relationship with financial stability in Africa while Gali (2014) found that the financial stability depends on the size of the money supply. Therefore, this research attempts to fill the gap by investigating the relationship between money supply and unemployment rate with the financial stability of banks in Malaysia.

There is also a limited of evidence or reference from previous studies which comparing between the influence of factors influencing the stability of Islamic banks and conventional banks in Malaysia over the last 4 years 2014-2017. Although the recent study involving Malaysia undertaken by Lassoued (2018) covered the year of 2005 to 2015, there is no comparison made between Islamic and conventional banks in this study. Hence, there is no clear conclusion can be made which banks are more stable. Thus, this study attempts to fill this gap by examining the latest findings of factors influencing the financial stability of Islamic banks and conventional banks in Malaysia between 2009 and 2017.

In addition, there were limited literature available on comparing factors influencing the stability of Islamic and conventional banks in Malaysia. Malaysia was selected because

of its implementation of the two mode of banking system and has most comprehensive Islamic banking system in the world. There was lack of study has been done on conventional and Islamic banks in Malaysia by previous researchers except a study carried out by Wahid & Dar (2016); Rahim & Zakaria (2012) on both Islamic banks and conventional banks in Malaysia. They investigated the internal and external factors on influencing the stability of banks. The purpose of this study is to examine the financial stability of conventional banks and Islamic banks in Malaysia and its relationship with internal and external factors.

1.3 Research Questions

The research questions are identified in order to achieve the following objectives are as follows:

1. Is there any relationship between bank-specific variables with the financial stability of Conventional banks and Islamic banks over the period 2009 to 2017?
2. Is there any relationship between macroeconomic factors with financial stability of Conventional banks and Islamic banks over the period 2009 to 2017?

1.4 Research Objective

The general aim of this research is to analyse the factors of financial stability of Islamic and conventional banks. To achieve this aim, the following specific objectives are set up:

1. To examine the impact of bank-specific variables with financial stability of Conventional banks and Islamic banks over the period 2009 to 2017.
2. To examine the impact of macroeconomic factors with financial stability of Conventional banks and Islamic banks over the period 2009 to 2017.

1.5 The Significance of the Study

The study is to achieve as much information to have a better understanding of the financial stability of conventional and Islamic banks that influence by bank-specific and macroeconomic factors. In this research, it is aimed to provide fresh and new insight on how conventional banks and Islamic banks' financial stability which is the capability to resist against any internal and external crisis and meet their financial commitments when they become due as it is important in order to be able to compete better in the industry (Miah & Uddin, 2017).

The findings derived from this study could offer an important understanding for the Malaysia banks especially Islamic banks as it is growing rapidly in this competitive industry. Hence, Islamic banks or Islamic financial institutions must be able to recognize

the significance of this study in order to increase their competitiveness and continue to become one of the major banking provider in the industry.

As for the government, this study is useful as the government is the policy maker of the nation hence they would obtain new information that could be used as a strategy to improve the economy of a country. Therefore, the government could focus more on the important determinants that they think could appeal more attractive investments to investors, especially foreign investors. This research is also important for the authorities such as "The National Economic Action Council (NEAC) Ministry of Finance" and "Islamic Finance Services Board (IFSB)" to acknowledge whether the stability issues could bring threats to the financial institutions' stability.

Furthermore, this study will also contribute to future researchers as the sources of reference and the information derived from this study could help them to complete the same area of studies and could support their opinion.

1.6 Scope of the Study

The main aim of this study is to determine financial stability of conventional and Islamic banks in Malaysia measured by Z-score that influence by internal factors such as liquidity ratio, profitability, asset quality ratio and capital ratio and also external factors such as GDP, inflation rate, unemployment rate, and money supply. There are 16 Islamic

banks and 24 Conventional banks in Malaysia covered in this research. The data was selected by considering its availability and consistency which comprised of the financial ratios obtained from the annual reports of conventional banks and Islamic banks obtained from the FitchConnect database. The sample derived is for 9 years period from 2009 to 2017 on an annual basis.

1.7 Limitations of the Study

There are some limits pertaining to this study that needs to be considered. First, the data used for this research is relying on the secondary data, where the sources are obtained from the published data. Thus, its reliability and accuracy of data and all the findings are entirely depended on the published materials. Second, the data used for this study only covered up to several years which is 9 years only (2009 to 2017). Hence, a longer period could be enough in order to offer an accurate results. Third, the limited literature reviews on financial stability remains a problem to support the variables of the study and findings.

1.8 Organization of the Thesis

This research is organized into five chapters. The background of the study and also the information on the financial stability in the conventional banks and Islamic banks in Malaysia are discussed in Chapter One. This chapter also describes the research problem raised and leads to the research questions and research objectives of the research. The significance of the study has also been highlighted in this chapter.

Chapter Two discusses the prior empirical evidence from the literature that is related to the topic of this study and also covers the related theories of the study. While Chapter Three will offer the methodology and data used in this study. It includes the research framework, hypothesis statement, research design, definitions and measurements of variables, sources of data and data collection procedures and also methods employed to analyse the data.

While in Chapter Four it will cover the results of the findings and discussions on the relationships between internal factors and external factors with financial stability in conventional banks and Islamic banks in Malaysia. Lastly, Chapter Five discusses the conclusion and summary of the study, and also the recommendations for this study.

1.9 Summary of Chapter

This study focused the relationship between internal and external factors with financial stability of conventional banks and Islamic banks in Malaysia. This chapter also had clearly discussed the issues of this study and the research objectives and research questions. Other than that, this research provides the information about the importance of the study for all relevant parties such as financial institutions, government and future researchers which was covered in the significance and limitation of the study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter provides the review of the literatures and previous studies relevant to this research. It will look at the theoretical and empirical literature that are linked with the relationship between dependent and independent variables chosen for this research. The previous studies will be reviewed in order to get the overview and act as a guide to conduct the research further. At the end of the chapter, it will conclude all the arguments and discussion which apply to this study.

2.1 Financial Stability

The dependent variable used in this study is financial stability. Financial stability can be defined as the existence of extreme instabilities in financial institutions and marketplaces (Rahim, Hassan, & Zakaria, 2012). There have been a lot of studies that study the financial stability of the Islamic banks and conventional banks in specific and some concentrated on the panel of countries. Z-score is chosen as an indicator of financial stability due to its ability to indicate insolvency risk of the banks (Miah & Uddin, 2017). Z-score has been used to measure the stability in various studies Hesse & Cihak (2007); Creel, Hubert, & Labondance (2014); Louati & Boujelbene (2015); Miah & Uddin (2017); Ibrahim (2015); Pappa, Ongena, Izzeldin, & Fuertes (2016); Beck, Demirguc-Kunt, & Merrouche (2013); Karim, Alhabshi, Kassim, & Haron (2017). Insolvency

could happen when the debt level of the banks are higher than the value of the assets (Hossain & Imam, 2017). A lower Z-score indicates that the banks are in the probability of failure, while a higher Z-score indicates otherwise. Hence, Z-score is an appropriate indicator to be used as a proxy of financial stability.

In the literature of comparing Islamic banks and conventional banks' stability, a study taken by Rashid, Yousaf, & Khalleequzzaman (2017) to study the contribution of Islamic banks towards the financial stability of Pakistan from the year of 2006 to 2012 by using the random effects estimator found that Islamic banks are financially stronger than their conventional counterparts. This is because of the implementation of real business activities that are based on return and risk sharing principle. This claims can also be supported by similar research done by Rajhi & A.Hassairi (2013); Hasan & Dridi (2010); Ullah, Saddozai, Hussain, & Rehman (2017) and Miah & Uddin (2017) as the researchers also found that Islamic banks are more stable than conventional ones. Another view from Rahim, Hassan, & Zakaria (2012) where the researchers examined the comparisons of financial stability between conventional banks and Islamic banks in Malaysia from 2000 to 2010 also found that Islamic banking is more stable than large and small conventional banks.

However, these claims contradicted with the study by Korbi & Bougatef (2017) who indicated Islamic banks are less stable than convetional banks when determining the factors that influence the stability of Islamic and conventional banks in MENA

countries. This can be supported by the studies of Gamaginta & Rokhim (2009); Abrar, Ahmed, & Kahfi, (2018) and Wahid & Dar (2016).

According to Alshubiri (2017), the stability and banking system have become a very critical point in building a stable economic system and the international trade of any countries can be determined. In the study of Langrin (2002), it was suggested that the presence of an early warning system which observes of the changes that can occur at the level of microeconomic and macroeconomic indicators and can be utilized to determine the stability of banking system indicators. Furthermore, the study Fell & Schinasi (2005) found that financial stability must be correspondence to the nature of the economy. According to End (2006), indicated by using balance sheet information, the banks able to determine the financial analysis indicators and to compare the banks' positions in terms of markets and stability.

In this study, the factors influencing the financial stability of banks are categorized into bank-specific variables and macroeconomic factors. The internal factors used in this study are Liquidity ratio, Profitability, Asset quality ratio, and Capital ratio while external factors to be used in this study are Gross Domestic Product, Inflation rate, Unemployment rate, and Money Supply. The description and past studies of internal ad external factors on financial stability are reviewed in section 2.2 and section 2.3, respectively.

2.2 Bank-specific Factors

Bank-specific factors or internal factors are revised from past researches in subsection 2.2.1 to 2.2.4.

2.2.1 Liquidity Ratio

Liquidity ratio can be measured by dividing liquid assets by total assets and also liquid assets by deposits and short-term funding. The ratio is used to indicate the ability of banks to meet its short-term obligations. Ghenimi, Chaibi, & Omri (2017) analyzed the relationship between liquidity risk and its impact on stability of banks in MENA countries by employing Generalized method of moments (GMM) from the year of 2006 to 2013. The authors found that the liquidity ratio is significantly impact on banking stability. They supported the finding by stated that a higher liquidity ratio implies banks are stable. This result can be supported by Tabak, Fazio, & Paiva (2016) who analyzed the joint effect of inflation target and the banking supervision policies on financial stability in different countries; Korbi & Bougatef (2017) studied the influences influence the stability of Islamic banks by employing random effects and fixed effects model and conventional banks in MENA region from the year of 1999 to 2014 and Dahir & Mahat (2017) studied the influence of funding liquidity and bank size on the financial stability. They further revealed that higher liquidity will lead to more stable banks and financial system.

However, these findings can be contended by Lassoued (2018) analyzed relationship of corporate governance and financial stability of Islamic banks in Malaysia from the year of 2005 to 2015. They found out that liquidity ratio has no relationship with financial stability.

2.2.2 Profitability

Profitability can be measured by using Return on Asset. It can be calculated by dividing net income over total assets. Ullah, Saddozai, Hussain, & Rehman (2017) studied on the factors of financial stability of Pakistani Islamic banks from 2007 to 2014, found out that Return on Asset (ROA) is significantly related to financial stability as higher returns indicate that the banks invest more by taking high risks in order to earn more returns. When the banks are investing less, it could lead to a lower profit and low stability. Similar findings were found by Ghenimi, Chaibi, & Omri (2017) studied the impact of credit risk and liquidity risk on bank stability in MENA countries over the period 2006 to 2013; Abrar, Ahmed, & Kahfi (2018) compared the Pakistan's banks in terms of stability from 2012 to 2016; Wahid & Dar (2016) compared the financial stability of conventional and Islamic banks over the period 2004 to 2013 in Malaysia which employed the Pooled OLS robust regression. The researchers found that profitability measured by ROA is significantly related to financial stability. These could indicate that higher ROA leads to higher stability.

In contrast, Ashraf, Rizwan, & L'Huillier (2016) study on factors of the financial stability of Islamic banks for the period of 2000 to 2013 by employing dynamic models; found that ROA is negatively related to financial stability of banks.

2.2.3 Asset Quality Ratio

Impaired loans over gross loans are used as the measurement of asset quality ratio. It is used to evaluate the quality of bank assets in order to look into bank stability and performance. Chakroun & Gallali (2015) analysed the difference in terms of stability and banking risks between conventional and Islamic banks in GCC countries from 2003 to 2012 by utilizing regression model. They collected data from 136 banks from Gulf countries found that asset quality ratio has a negatively and significantly related with financial stability of conventional banks whilst Islamic banks are insignificantly related between asset quality and financial stability.

However, the study undertaken by Bourkhis & Nabi (2013) analysed Islamic and conventional banks financial soundness before, during and after the recent global financial crisis from the period of 1998 to 2009 from 16 countries. The researchers found that there is no significant difference between Islamic and conventional banks in terms of asset quality and financial stability.

2.2.4 Capital Ratio

The measurement of a capital ratio is by dividing equity and total assets. It is the most standard ratio used to determine the overall financial stability of the banks. The level of leverage used by a bank can be indicated by this ratio. A low ratio indicates that the banks' managerial performance well. Tabash & Dhankar (2015), who examined the relationship between Islamic and conventional banks financial stability in Gulf regions before, during and after the financial crisis by employing ANOVA, revealed that Islamic banks have higher capitalization than conventional ones. It is further discussed that Islamic banks have a large capacity of absorbing loans and able to protect Islamic banks from any crisis since higher capital ratios work as a cushion against any asset failures. The result can be supported by the study of Alqahtani & Mayes (2010); Wahid & Dar (2016) Abrar, Ahmed, & Kahfi (2018), where the researchers found capital ratio and financial stability has a positive and significant relationship. The higher capital ratio indicates a higher customer's confidence towards the banks.

In addition, the study was undertaken by Louati & Boujelbene (2015) examined the efficiency-stability of Islamic and conventional banks in MENA and SEA countries from 2005 to 2012 found that capital ratio is negatively and significantly related with financial fragility. This can be explained that capital ratio can be considered as a source of risk aversion on the liability side.

2.3 Macroeconomic Factors

Macroeconomic factors or external factors are reviewed from past literatures in subsection 2.3.1 to 2.3.4.

2.3.1 Gross Domestic Product

GDP is a popular indicator of overall economic activities of the country. Past studies that have been done such as Rahim, Hassan, & Zakaria (2012), investigated the comparison of the level financial stability of Islamic and conventional banks in Malaysia from 2005 to 2010 by using fixed effects estimation, found that GDP has a significant relationship with stability. The researchers also further discussed that the higher the GDP, the higher the financial stability and leads to lower risk of defaults. This can be supported by Rajhi & A.Hassairi (2013); Oduor, Ngoka, & Odongo (2017); Shahid & Abbas (2012).

However, these claims are contended by the study of Lassoued (2018); Rashid, Yousaf, & Khalleequzzaman (2017); Dahir & Mahat (2017) and Cihak & Hesse (2010). The researchers found that the GDP has an insignificant effect on banks' financial stability.

2.3.2 Inflation Rate

Consumer price index as a measurement to inflation is widely used to indicate the economic condition of the country. Rahim, Hassan, & Zakaria (2012); Hossain & Imam (2017); Pappa, Ongena, Izzeldin, & Fuertes (2016); Alqahtani & Mayes (2010);

Chakroun & Gallali (2015). The researchers found that the inflation rate is significantly related with banks' financial stability. They further revealed that financial stability reflects positively on the prices in the market.

In contrast, Cihak & Hesse (2010) analysed the role of Islamic banks in financial stability in various regions from 1993 to 2004 by employing OLS technique found that inflation rate is not significantly related with financial stability of both Islamic and conventional banks. Similarly Wahid & Dar (2016); Okumus & Artar (2012); found that inflation rate does not have any impacts on financial stability.

2.3.3 Unemployment Rate

Unemployment rate is an indication of the availability of people seeking for jobs but there is few or no jobs were available. Kiseľáková & Kiseľák (2013) investigated the factors influencing the stability of economies and changes in these factors in European region from the year of 2004 to 2010 using regression model found that unemployment rate is positively related with the banks' profitability. The researcher further explained that when the unemployment rate is increasing, the ability of the client to pay the loans is decreasing. Hence, leads to the low profitability of banks. This claim can be supported by Heffernan & Fu (2008) that the unemployment rate has a significant effect on banks' profitability because increasing unemployment rate could cause a higher loan default rate.

These findings indicated that past studies have discussed the unemployment rate as a determinant of the banks' profitability. However, there are limited studies found where the unemployment rate being tested on financial stability. In order to relate to the financial stability of banks, profitability showed a significant effect on banks' financial stability as found by Ghenimi, Chaibi, & Omri (2017). Thus, in order to fill this gap, the unemployment rate is included in this research.

2.3.4 Money Supply

Money supply is used as an indicator of the total amount of money in a country. This is also one of the important indicator as it reflects to the condition of an economy in a country and it could affect the stability of banks.

A research carried out by Oduor, Ngoka, & Odongo (2017); investigated the relationship of macroeconomic indicators with financial sector stability in Africa for the period of 2000 to 2011 using OLS regression, revealed that there is a significant relationship between money supply and financial stability. Chakroun & Gallali (2015) analysed the stability and banking risks with financial stability on GCC countries contended these claims with their findings that money supply growth has no significant effect on bank stability. However, the study on money supply and financial stability of banks is relatively limited.

2.4 Related Theories to the Study

2.4.1 The Financial Intermediation Theory

According to Leland & Pyle (1977), "financial intermediation is an appearance of unbalanced of information and then introduced a signalling model". The banks including Islamic banks are exposed to various financial risks from a range of financial contracts are working as financial intermediaries and the banks play a crucial roles in developing a stable economy by collecting fund from depositors and investing to the various portfolios and allocate the profit and loss according to the pre-determined ratios as stated in profit and loss agreement with the contracting parties (Abrar, Ahmed, & Kahfi, 2018). Based on Elgari (2003), "conventional banks borrow from the surplus unit and later lend to the deficit unit while Islamic banks actively take part in PLS contracts like *Mudhrabah* or involve in the intermediation process with the surplus unit or deficit unit".

In addition, Diamond & Dybvig (1983) further explained that the instability of banks can happen when the liquidity and asset side of banks are a mismatch. The banks' asset could turn out to be risky when the bank lending is not having enough liquidity than customers' deposit (bank's liability).

2.4.2 Aggregate Macroeconomic Model

The theory of aggregate macroeconomic model was developed by Metzler (1951) where the macroeconomic model consists of capital market, money market and market for

goods is used to study the behaviour of the Islamic banking system at an aggregate level. Then it is further discussed by Khan (1986) that Islamic banking model is proved to be well suited for any economic shocks than its conventional counterparts due to the equity and participation model that implemented by Islamic banks does not bring direct effects on Islamic banks' performance. This is further explained that equity-based system able to immediately absorbed any shocks to asset positions by changes in liabilities. Hence, there will be an equal in real values of assets and liabilities in Islamic banking model.

2.5 Summary of Chapter

As a conclusion, this chapter has discussed the previous empirical studies for a brief understanding of the possible relationship that could occur between the variables. This is to give the readers an understanding of what this study is all about. The next part was focusing on the financial intermediation theory are related to financial stability. It also can conclude that most of the previous authors utilized quite a similar method to find the relationship between internal and external factors with banks' stability.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter explains the research design and methodology of this study. The sequence of discussion of this chapter started with research framework, hypothesis development, research design, measurement of research variables, data collection procedures and data analysis technique.

3.1 Research Framework

The research framework shown in Figure 3.1 is based on literature review and research problems as stated in Chapter Two. It could provide a better understanding of the effects of the variables that influence the financial stability in Islamic banks and conventional banks in Malaysia. Financial stability which is indicated by Z-score is used as the dependent variable. Eight independent variables are used in this study. They are categorized into two groups. The first group consists of four bank specific factors which are liquidity ratio, capital ratio, asset quality ratio, profitability. The second group consists of four macroeconomic factors which are GDP, inflation rate, unemployment rate and money supply. The research framework of this study as follows:

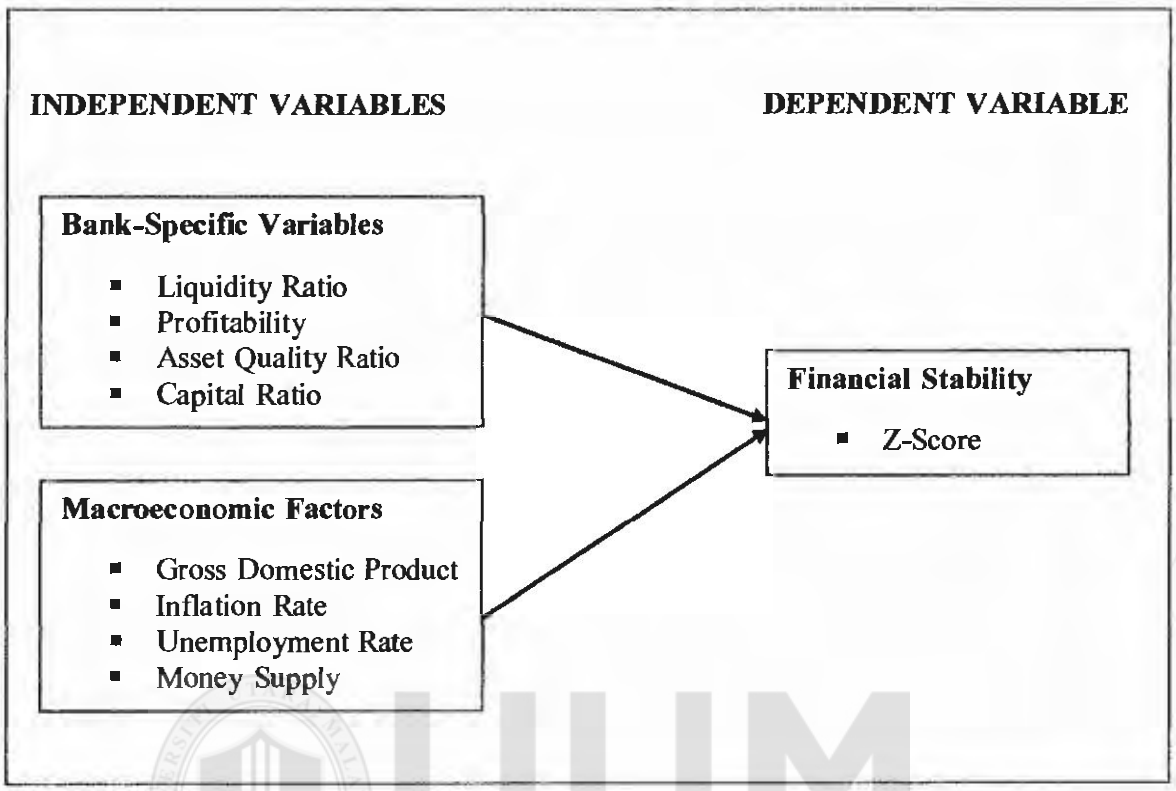

Figure 3.1

Research Framework

3.2 Hypothesis Development

This section is elaborating the development of the hypotheses of this study. The development of the hypotheses are developed in following with the research framework in Figure 3.1.

3.2.1 Bank-Specific Variables

The bank-specific variables which are chosen for this research are liquidity ratio, profitability, asset quality ratio, and capital ratio.

3.2.1.1 Liquidity Ratio

Liquid assets over total assets are used as a measurement of liquidity ratio. It is a measure of the maturity structure of the asset portfolio that can reflect excessive maturity unbalances (Poghosyan & Čihák, 2009). Liquidity ratio used to indicate to what extent an organization able to meet its financial obligations (Odeduntan, Adewale, & Hamisu, 2016). Generally, the higher the ratio, the more liquid the banks are. The relationship between liquidity ratio and financial stability has been highlighted by previous studies such as M. Tabák et al (2016); Ghenimi et al (2017); and Rajhi & A.Hassairi (2013). They suggested that there is a significant relationship between liquidity ratio and financial stability. Thus, this study hypothesized that:

H_1: There is a significant relationship between Liquidity Ratio and Financial Stability in Conventional banks and Islamic banks in Malaysia.

3.2.1.2 Profitability

Profitability is measured by Return on Asset (ROA) by dividing net income by total assets. It measures how profitable are the bank assets in creating revenues

(Roman & Sargu, 2013). According to Abrar et al (2018), the authors suggested that there is a positive and significant relationship between profitability and financial stability because when the ROA of the banks' increases, the financial stability of banks also increases. Thus, this study hypothesized that:

H_2: There is a significant relationship between Profitability and Financial Stability in Conventional banks and Islamic banks in Malaysia.

3.2.1.3 Asset Quality

Asset quality is one of the main variables to measure the financial stability of the banks as it able to indicate the strength of a bank and it directly related to the capital adequacy. This is because the depreciation of assets is the cause of solvency risks (Roman & Sargu, 2013). Chakroun & Gallali (2015) found a significant relationship between asset quality and financial stability in conventional banks.

H_3: There is a significant relationship between Asset Quality and Financial Stability in Conventional banks and Islamic banks in Malaysia.

3.2.1.5 Capital Ratio

Capital ratio is measured by dividing total equity by total assets and it is used to measure the ability of a bank to withstand any losses. When the ratio is

increasing, it shows that even though the economy is facing an unstable condition, a bank can remain stable as the high ratios portray a strong capitalization in the bank. Abrar et al (2018) and Wahid & Dar (2016) found out that there is a positive and significant relationship between capital ratio and financial stability. Thus, based on these empirical findings, this study hypothesized that:

H_4: There is a significant relationship between Capital Ratio and Financial Stability in Conventional banks and Islamic banks in Malaysia.

3.2.2 Macroeconomic Variables

The macroeconomic variables that were chosen for this research are GDP, inflation, unemployment rate, and money supply.

3.2.2.1 Gross Domestic Product

Growth Domestic Product (GDP) is better known as a standardized economic indicator to measure economic performance. According to Rahim & Zakaria (2012), the higher the GDP, the Z-score would be increased. Thus, the risk of non-payment from the customers would be lower. Hence, it was suggested by Rahim, Hassan, & Zakaria (2012) and Hossain & Imam (2017) that GDP has a significant relationship with financial stability of banks. Therefore, this study hypothesized that:

H_5: There is a significant relationship between Gross Domestic Product and Financial Stability in Conventional banks and Islamic banks in Malaysia.

3.2.2.2 Inflation Rate

An increasing inflation rate may worsens the financial condition and lead to an unstable financial system and also the economy of a country. Inflation also can weaken the ability of purchasing power of consumers since the higher costs have incurred. It was suggested by Korbi & Bougatef (2017) and Ghenimi, Chaibi, & Omri (2017) that inflation rate is significantly impact on financial stability in the MENA region. Therefore, this study hypothesized that:

H_6: There is a significant relationship between Inflation Rate and Financial Stability in Conventional banks and Islamic banks in Malaysia.

3.2.2.3 Unemployment Rate

The unemployment rate is the share of the labour force that is without work but seeking employment. It was suggested by Kisel'áková & Kisel'ák (2013)that when the unemployment rate is increasing, the ability of the client to pay the loans is decreasing. Hence, leads to the low profitability of banks. Thus, the proposed hypothesis is as follows:

H_7: There is a significant relationship between the Unemployment Rate and Financial Stability in Conventional banks and Islamic banks in Malaysia.

3.2.2.4 Money Supply

Money supply is one of the macroeconomic variables that bring impact to both Islamic and conventional banks' stability. It is a measure of the total amount and value of money in an economy. It was suggested by Oduor et al (2017) that there is a significant relationship between money supply and financial stability. Thus, this study hypothesized that:

H_8: There is a significant relationship between Money Supply and Financial Stability in Conventional banks and Islamic banks in Malaysia.

3.3 Research Design

This research examines the factors influencing the stability of Malaysia banks covering both Islamic and conventional banks. The data used is secondary data comprising of financial ratios representing the financial stability and the internal factors as well. This study employed multivariate regression using fixed effect model. The steps taken involved the following stages:

i. Collection of financial ratios from financial statements of Islamic banks and conventional banks for the period 2009 to 2017 obtained from FitchConnect database.

ii. Compute the financial ratios as proxies for the dependent variable and eight independent variables. These variables were identified from the literature reviews related to the topic.

iii. However, this research introduced macroeconomic variables such as money supply and unemployment rate as new predictors of financial stability of banks. In past studies these variables are hardly been found to be tested.

iv. The variables were subject to econometric test to ensure normality, linearity, homoscedasticity and multicollinearity assumptions have been met.

v. The independent variables were regressed to assess their influence on financial stability (dependent variable) for the pool model.

vi. Finally, further analysis was done to see the differences of financial stability influences between Islamic and conventional banks in Malaysia.

3.4 Variables Definition and Measurements

With reference to the research framework above, there are one dependent variable which is financial stability, four bank specific factors and four macroeconomic factors. The definition of each variables is explained in the following paragraph.

3.4.1 Dependent Variable

The dependent variable of this study is financial stability. The measurement for financial stability to be used in this study is Z-score as it is the widely used indicator as an alternative to measuring bank risk and soundness (Cihak & Hesse, 2010) (Maechler,

Mitra, & Worrel, 2005). The Z-score used to measure the soundness and stability of banks and it is an effective measurement as it is inversely related to the probability of bank insolvency (Odeduntan, Adewale, & Hamisu, 2016) (Shahid & Abbas, 2012). It also shows the distance from insolvency combining accounting measures of profitability, leverage, and volatility (Rajhi & A.Hassairi, 2013). Z-score is measured as "ROA (pretax return on assets) plus CAP (equity capital to asset ratio) and divided by s (the standard deviation of ROA)". A higher Z-score implies a high probability of a more stable bank and a lower z-score implies a high probability of failure of the bank.

3.4.2 Independent Variables

3.4.2.1 Liquidity Ratio

Liquidity ratio is the measurement of the solvency of banks and to indicate how fast a bank can meet its financial obligations. Generally, the higher the value of the ratio, the larger the margin of safety of bank-owned and able to cover the debts (Wasiuzzaman & Gunasegavan, 2013). Liquid assets over total assets will be used as a liquidity ratio measurement.

3.4.2.2 Profitability

Return on Asset (ROA) is the measurement of profitability of banks used in this study. It refers to the profitability of the assets of the firm after deducting all the expenses and taxes (Horne & Wachowicz, 2005). It measures the amount a firm is earning after tax/zakat for each ringgit invested in assets of the firm.

Generally, a higher ratio shows that the firm is utilizing the assets efficiently and good managerial performance while a lower ratio indicates inefficient use of assets.

3.4.2.3 Asset Quality Ratio

Asset quality can be defined as an estimation of the quality of bank assets and normally it is normally based on the loans and leases (Wasiuzzaman & Gunasegavan, 2013). The asset quality ratios involve taking into account the likelihood of borrowers paying back loans (Alkassim, 2005). In order to evaluate the credit risk associated with an asset, the ratio will be used. A lower ratio shows that banks have a better quality of their assets and loans portfolios. In this study, the indicator of asset quality will be used is for impaired loans (NPLs) over gross loans. This ratio will measure the banks' ability to approve loans to prime clients that will refund their debts (Roman & Sargu, 2013).

3.4.2.4 Capital Ratio

The capital of the banks is usually gained from funds from issuing shares and retained earnings (Rahman, 2015). The capital ratio indicates the strength of banks' in terms of capital and equity of banks that could impacts a higher profitability of the banks. It can measure how the bank is capable to absorb losses in the future. Hence, a higher ratio indicates a healthy and sound bank

(Wasiuzzaman & Gunasegavan, 2013). Capital is proxied by the ratio of total equity over the total asset.

3.4.2.5 Gross Domestic Product

Gross Domestic Product (GDP) is a measurement of the nationwide productivity of an economy. Simply put, it is used to indicate the country's economy well-being. Various factors are included in GDP such as private and public consumption, investments, import and export and others.

3.4.2.6 Inflation Rate

Consumer Price Index (CPI) is used an indicator for inflation rate. Inflation rate can be described as a measurement of the general price level for products and services to the public. When the level of the price are higher, it will be reflect to the purchasing power of money. This is happen when the people have more power to purchase the products. It is associated with higher costs and higher income in a country.

3.4.2.7 Unemployment Rate

The unemployment rate is a widely used as an indicator of the well-being of labour and an essential measure of the state of a country's economy in general (Byrne & Strobl, 2001). It is also refers to a higher applications of jobs from the

individuals that are having no work but there is less jobs available in the market. When the unemployment rate increases, the performance of banking sector will also decrease as the profit will decline since the clients are unable to pay loans provided by banks as they are losing the jobs and the clients' credibility to enter any loans portfolios are also will be restricted (Kiseľáková & Kiseľák, 2013).

3.4.2.8 Money Supply

Money supply can be defined as the total money available in the economy. BNM will control the money circulation of an economy by decreasing the requirement of reserve of banks and by doing this, BNM could lend out more money. Thus, it contributes to a higher profitability of banks.

Table 3.1 presented a summary of the definition and measurement of this study.

Table 3.1

The Summary of Variables Definition and Measurement

Variables	Measurements	Sources
Financial Stability (FS)	Z = (ROA+CAP)/S ROA = Pretax return on assets (earnings before taxes and securities gains/losses divided by average assets) CAP = Equity capital to asset ratio S = Standard deviation of ROA	Cihak & Hesse (2010); Rashid, et al (2017); Korbi &Bougatef (2017)

Liquidity Ratio (LIQR)	Liquid Assets / Total Assets	M.Tabak, et al (2016); and Ghenimi, et al (2017)
Profitability (PROFIT)	Return On Assets = Net Income / Average Total Assets	Wahid & Dar (2016); Abrar, et al (2018); and Dahir & Mahat, (2017)
Asset Quality Ratio (AQR)	Impaired Loans (NPLs) / Gross Loans	Bourkhis & Nabi, (2013); Wahid & Dar (2016) and Roman & Sargu (2013)
Capital Ratio (CAP)	Equity / Total Assets	Chiaramonte & Casu (2016); Ghenimi, et al (2017) and Lassoued (2018)
Gross Domestic Product (GDP)	GDP per capita growth	Dahir & Mahat (2017); Oduor, Ngoka,& Odongo (2017)
Inflation Rate (INF)	Consumer Price Index	Hossain & Imam (2017) and Okumus & Artar (2012)
Unemployment Rate(UNR)	Total Unemployment Rate	Kiseľáková & Kiseľák (2013)
Money Supply	M2	Galí (2014) and Oduor, Ngoka, & Odongo (2017)

3.5 Data Collection

3.5.1 Sampling

The empirical testing based on data availability will focus on Malaysian banks which comprises of Islamic and conventional banks.

3.5.2 Data Collection Procedures

The procedure of sample selection and data collection for this study is discussed in the following section in detail.

3.5.2.1 Data Sources

This research used secondary data and utilizes unbalanced panel data, which consists of a time series for each cross-sectional member in the data set. The sources internal factors of this study, which comprises of financial ratios were derived from annual reports of both conventional banks and Islamic banks in Malaysia that was published in FitchConnect database for the duration of 9-year annual data from the year 2009 to 2017. While for external factors, the data were collected from the World Economic Outlook (World Bank) is also taken from the year 2009 to 2017. The sources of data collection for the variables used in this study are presented in Table 3.2 below.

Table 3.2

Sources of Data

Variables	**Description**	**Sources**
Financial Stability	Z-score	The researcher's calculations based on FitchConnect data
Liquidity ratio	Ratio	FitchConnect
Profitability	Ratio	FitchConnect
Asset Quality	Ratio	FitchConnect
Capital ratio	Ratio	FitchConnect

Gross Domestic Product (GDP)	Aggregate Economic Activity	World Bank
Inflation rate	Consumer Price Index	World Bank
Unemployment rate	Total Unemployment rate	World Bank
Money supply	Total Value of Monetary Assets Available in an Economy	World Bank

3.5.2.2 Population and Data Collection

In this study, the population covers all the conventional banks and Islamic banks that are listed on the website of the Central Bank of Malaysia (BNM). As of today, there was a total of 26 conventional or commercial banks, which consists of 8 domestic banks and 18 foreign banks. However, there were two foreign banks had been dropped from this study due to the lack of data availability, which is China Construction Bank (Malaysia) Berhad and MUFG Bank (Malaysia) Berhad. As for Islamic banks, there was a total of 16 Islamic banks listed in BNM, where it consists of 11 domestic banks and 5 foreign banks. Hence, this study employs the entire population of both conventional banks (24 banks) and Islamic banks (16 banks) in Malaysia with a total of 40 banks. The list of sample banks is shown in the Table 3.3 and Table 3.4 below.

Table 3.3

Distribution of Conventional Banks in Malaysia

No.	Name	Ownership
1.	Affin Bank Berhad	Local
2.	Alliance Bank Malaysia Berhad	Local
3.	AmBank (M) Berhad	Local
4.	BNP Paribas Malaysia Berhad	Foreign
5.	Bangkok Bank Berhad	Foreign
6.	Bank of America Malaysia Berhad	Foreign
7.	Bank of China (Malaysia) Berhad	Foreign
8.	CIMB Bank Berhad	Local
9.	China Construction Bank (Malaysia) Berhad	Foreign
10.	Citibank Berhad	Foreign
11.	Deutsche Bank (Malaysia) Berhad	Foreign
12.	HSBC Bank Malaysia Berhad	Foreign
13.	Hong Leong Bank Berhad	Local
14.	India International Bank (Malaysia) Berhad	Foreign
15.	Industrial and Commercial Bank of China (Malaysia) Berhad	Foreign
16.	J.P Morgan Chase Bank Berhad	Foreign
17.	MUFG Bank (Malaysia) Berhad	Foreign
18.	Malayan Banking Berhad	Local
19.	Mizuho Bank (Malaysia) Berhad	Foreign
20.	OCBC Bank (Malaysia) Berhad	Foreign
21.	Public Bank Berhad	Local
22.	RHB Bank Berhad	Local
23.	Standard Chartered Bank Malaysia Berhad	Foreign
24.	Sumitomo Mitsui Banking Corporation Malaysia Berhad	Foreign
25.	The Bank of Nova Scotia	Foreign
26.	United Overseas Bank (Malaysia) Bhd.	Foreign

Source: Bank Negara Malaysia (BNM), (2019)

Table 3.4

Distribution of Islamic Banks in Malaysia

No.	Name	Ownership
1.	Affin Islamic Bank Berhad	Local
2.	Al Rajhi Banking & Investment Corporation (Malaysia) Berhad	Foreign
3.	Alliance Islamic Bank Berhad	Local
4.	AmBank Islamic Berhad	Local
5.	Bank Islam Malaysia Berhad	Local
6.	Bank Muamalat Malaysia Berhad	Local
7.	CIMB Islamic Bank Berhad	Local
8.	HSBC Amanah Malaysia Berhad	Foreign
9.	Hong Leong Islamic Bank Berhad	Local
10.	Kuwait Finance House (Malaysia) Berhad	Foreign
11.	MBSBBank Berhad	Local
12.	Maybank Islamic Berhad	Local
13.	OCBC Al-Amin Bank Berhad	Foreign
14.	Public Islamic Bank Berhad	Local
15.	RHB Islamic Bank Berhad	Local
16.	Standard Chartered Saadiq Berhad	Foreign

Source: Bank Negara Malaysia (BNM), (2019)

3.6 Regression Model

The best way to describe the relationships between independent variables and the dependent variable is to form the research equation based on regression statistical techniques (Creswell, 2008). The research equation represents the research framework. In this study, multiple regression is a method of data analysis that is used to examine the significant relationship of a dependent variable of a dependent variable with independent

variables factors. The coefficient value and their signs will denote the effect of the independent variables on financial stability.

3.6.1 Multiple Regression Models

The regression equations for this study are as follows:

(i) Pool Factors:

$$FS_{it} = \alpha_{oit} + \beta_1 LIQR_{it} + \beta_2 PROFIT_{it} + \beta_3 AQR_{it} + \beta_4 CAP_{it} + \beta_5 GDP_{it} + \beta_6 INF_{it} + \beta_7 UNR_{it} + \beta_8 M3_{it} + \varepsilon_{it} \quad (1)$$

(ii) Bank-Specific Variables:

$$FS_{it} = \alpha_{oit} + \beta_1 LIQR_{it} + \beta_2 PROFIT_{it} + \beta_3 AQR_{it} + \beta_4 CAP_{it} + \varepsilon_{it} \quad (2)$$

(iii) Macroeconomic Variables:

$$FS_{it} = \alpha_{oit} + \beta_1 GDP_{it} + \beta_2 INF_{it} + \beta_3 UNR_{it} + \beta_4 M2_{it} + \varepsilon_{it} \quad (3)$$

Where;

α = the constant number of equation

β = Coefficient Beta value

ε_{it} = Error term of bank $_i$ on time $_t$

Dependent variable:

FS = Financial Stability

Independent variables:

LIQR	=	Liquidity ratio
PROFIT	=	Profitability
AQR	=	Asset Quality ratio
CAP	=	Capital ratio
GDP	=	Gross Domestic Product
INF	=	Inflation rate
UNR	=	Unemployment rate
M2	=	Money Supply

For a given value of an independent variable, the coefficient β allows the prediction of the resulting change in financial stability. The independent variables that explained the amount of variation is called the coefficient of determinants or adjusted R-squared. This explains the percentage of variance explained by the independent variables.

3.7 Data Analysis

The data of the variables will be analysed using statistical package software which is Statistical Program for Social Science (SPSS), and Econometric Views (E-Views) because this software is complete in order to conduct the tests related to this study.

There were used in three stages; (1) diagnostic test; (2) panel data test; and (3) multiple regression analysis. The technique for data analysis for this study is explained in the sections below. This analysis is to analyse and support the objectives and hypotheses of this study.

3.7.1 Diagnostic Tests

The purpose of testing the quality of data and variables is to strengthen the process of generalization of the data. There are five quality tests such as; (1) detecting outliers using univariate, bivariate and multivariate techniques depending on the number of variables; (2) multicollinearity test to ensure the correlation between variables by using the tolerance value and variance inflation factor (VIF); (3) normality test to ensure that the data and variables are normally or not normally distributed; (4) homoscedasticity test and (5) auto-correlation test.

3.7.1.1 Detecting Outliers

Outliers are the observations that have unique character and difference particularly from others (Hair, Money, Samouel, & Page, 2007). Detecting outlier is done using univariate, bivariate, and multivariate techniques depending on the number of variables. To detect the outlier observations, Mahalanobis distance value is examined and compared to the critical values in the Chi-square distribution table. This method measures the distance of each observation from the mean center of all observations in multidimensional space.

3.7.1.2 Multicollinearity Check

Multicollinearity is the situation where two or more variables can be highly linearly related (Gujarati & Porter, 2010). Multicollinearity test is to observe the existence of perfect or exact, a linear relationship among some or all variables of a regression model. It is a condition where the independent variables are highly correlated with each other. Serious Multicollinearity problem can be detected using Centered Variance Inflation Factor (VIF). A VIF of 1 means that there is no correlation while VIFs exceeding 10 are signs of serious multicollinearity requiring correction.

3.7.1.3 Normality Test

Normality test or based on Jarque-Bera is a test used to determine whether the error term is normally distributed or not. In coming to a conclusion on this test, the p-value of the Jarque-Bera statistic is important. If the p-value of Jarque-Bera is greater than 5 percent significance level, this can conclude that the error term is normally distributed.

3.7.1.4 Homoscedasticity Test

Homoscedasticity exists when the variance of error terms (ε) appears constant over a range of independent variables (Hair, Black, Babin, & Anderson, 2010). Heteroskedasticity is a problem when the error terms do not have constant

variance meaning unequal spread or variance. The suggested test for this is the White test.

3.7.1.5 Auto-correlation Test

Auto-correlation or serial correlation test is to investigate whether there is serial independence for the error term. It is to determine the correlation between two different time series data or space for cross-sectional data (Gujarati & Porter, 2010). Auto-correlation is defined as a condition where residuals are related to each other and it can be confirmed from the Profitability of Chi-Square of Obs*R-squared statistic. Breush-Godfrey Serial Correlation Lagrange Multiplier (LM hereafter) test is the test applied here.

3.7.2 Panel Data Test

Since this study is using panel data, an analysis to select the most suitable panel data model for this study was conducted. The most renowned panel data models which are fixed effects model (FEM) and random effects model (REM) were tested (Gujarati & Porter, 2010). Using the Hausman test, the fixed effects are compared with random effects in order to select the most suitable model for this study (Rahim, Hassan, & Zakaria, 2012). Fixed effects is chosen as the more suitable model when the correlation of null hypothesis is rejected.

3.7.2.1 Fixed Effects Model

Fixed effects model takes into account the 'individual' of each cross-sectional unit. It allows the intercept of each bank to vary but still assume that the slope coefficients are constant across firms. The previous study also suggested that the fixed effects model (FEM) is a suitable panel data estimator for this study by using the Hausman test statistics. The estimation of the fixed effect model, which is an extension of general regression equation, is as follows:

General regression estimation:

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_{it}$$

Where;

i= ith cross-sectional unit

t= tth time period

Fixed effects model estimation

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_{it}$$

Where;

i= intercept term

Gujarati and Porter (2007) highlighted that the subscript $_i$ on the intercept suggests that the intercepts of the individual bank may be different. They further elaborate that the differences could be due to the special features of each bank such as managerial style, policies, and strategies. However, although the

intercept across individual firm may differ but each individual's intercept does not vary over time (time-invariant), and this signifies by β_{1t}.

3.7.2.2 Random Effects Model

This approach treats intercept among individual differently from the fixed effects model. Instead of treating intercept (β_{1t}) as fixed, this approach assume that it is random variable with mean value of β_1 (without script *i*). The approach contends that the banks included as sample are drawing from a much larger universe of such banks and that they have a common mean value of the interception ($=\beta_1$) and the individual differences in the intercept values of each banks are reflected in the error term (ε_{it}) (Gujarati & Porter, 2010).

The estimation random effects model is as follows:

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_i + \mu_{it}$$

$$= \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + W_{it}$$

Where;

$W_{it} = \varepsilon_i + \mu_{it}$

ε_i = cross-section or individual specific error component

μ_{it} = the combined time series and cross-section error component

To summarize, a fixed effects model has its own (fixed) intercept (β_{1i}) value, whereas for random effects model, the intercept (β_1) represent the mean value of all the (cross-sectional) intercepts and the error component (ε_i) represents the (random) deviation of individual intercept from this mean value.

3.7.3 Multiple Regression Analysis

Multiple regressions are used in this research to validate the hypotheses and the control variable. Multiple regression analysis is used to explore the relationship between the variables used in this research. This test helps the researcher to achieve the objectives of this study in determining the factors that influence the financial stability of Islamic banks and conventional banks in Malaysia.

3.8 Summary of Chapter

For the conclusion of this chapter, all the information regarding the methodology used when conducting this study is stated according to the method that is suitable for this study. Research framework gives an overview of this study where independent variables are the factors that influence the dependent variable. Eight (8) hypotheses were developed to investigate the factors influencing the financial stability to answer the research question One (1) and Two (2). The methods used are Fixed Effects model and Multiple Regression Analysis.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

In this chapter, the results of the data analysis are discussed in detail. The sequence of discussion of this chapter started with descriptive statistics of the studies variables in Section 4.1. It followed detecting outliers, multicollinearity check, and analyses of normality, homoscedasticity, auto-correlation, and panel data test in Section 4.2 to 4.4. Subsequently, the results of the analysis inclusive of multiple regression test of the direct relationship between the financial stability and bank-specific and macroeconomic factors are presented and discussed in Section 4.5 and 4.6, respectively.

4.1 Descriptive Statistics of Variables

Descriptive statistics describe the basic features of the data in this study. Descriptive statistics is merely to summarize the data set, rather than being used to test the hypotheses. Table 4.1 presents the descriptive result of the variables for Islamic banks in Malaysia used in this study. Meanwhile, Table 4.2 presents the descriptive result of the variables for conventional banks in Malaysia.

Table 4.1

Descriptive Statistics of Variables for Islamic banks in Malaysia.

Variables	Mean	Std. Deviation	N
Financial Stability	40.63	24.65	143
Liquidity Ratio	10.22	7.81	121
Profitability	0.69	0.47	143
Asset Quality Ratio	2.49	2.73	143
Capital Ratio	8.61	3.83	143
Gross Domestic Product	2.95	2.37	143
Inflation Rate	107.99	6.74	143
Unemployment Rate	3.22	0.24	143
Money Supply	6.92	3.33	143

Table 4.2

Descriptive Statistics of Variables for Conventional banks in Malaysia.

Variables	Mean	Std. Deviation	N
Financial Stability	68.46	89.30	195
Liquidity Ratio	21.92	47.97	165
Profitability	0.96	0.49	196
Asset Quality Ratio	3.33	8.17	186
Capital Ratio	14.04	12.68	204
Gross Domestic Product	2.95	2.36	214
Inflation Rate	107.88	6.70	214
Unemployment Rate	3.22	0.24	214
Money Supply	7.00	3.38	214

Table 4.1 and Table 4.2 shows the descriptive statistics of the dependent variables and the independent variables of Islamic banks and Conventional banks in Malaysia. The dependent variable is FS, the independent variables are LIQR, PROFIT, AQR, CAP, GDP, INF, UNR, and M2. The result indicated that mean for FS for 16 Islamic banks in Malaysia over the study period is 40.63 while the mean for FS for 24 conventional banks in Malaysia over the study period is 68.46. The higher value of conventional banks indicates conventional banks are more stable than Islamic banks in Malaysia. This result suggest that Islamic banks are having higher possibility to insolvency risk. While the high FS for conventional banks implies a lower insolvency risk or probability of failure.

Table 4.1 and Table 4.2 also shows the mean value for CAP which is 8.61 for Islamic banks and 14.04 for conventional banks. The value is found to be much higher than 8 percent which is the minimum requirement for capital ratio under BNM requirements. Thus, it is found that on average the sample banks showed a strong capital over the study period. The results indicate that conventional banks are more stable and sound than Islamic banks in Malaysia. The mean value for GDP is 2.95 which indicate that during the study period, GDP for Malaysia was at solid growth of 3 percent with standard deviation at 2.37.

4.2 Multicollinearity Test

In this study, Variance Inflation Factor (VIF) is used to examine the existence of multicollinearity issue among the variables of the study. According to Hair, Black, Babin, & Anderson (2010) when VIF values are above 10 or tolerance values are less than 0.10, it shows that multicollinearity problem exist. Meanwhile, Pallant (2010) suggested that VIF value more than 9.0 should be taken as a warning of multicollinearity issues and the correlation matrix should be examined. The result of the test is presented in the Table 4.3 for Islamic banks and Table 4.4 for Conventional banks in Malaysia, respectively.

Table 4.3

Multicollinearity Diagnostic Test for Islamic banks in Malaysia.

Variables	Tolerance Value	VIF
Liquidity Ratio	0.922	1.085
Profitability	0.704	1.420
Asset Quality Ratio	0.603	1.657
Capital Ratio	0.602	1.660
Gross Domestic Product	0.479	2.087
Inflation Rate	0.439	2.278
Unemployment Rate	0.491	2.038
Money Supply	0.484	2.065

Referring for Table 4.3, there is no evidence of multicollinearity problem exists in the model for Islamic banks in Malaysia since the variables have VIF less than 9.0. The highest VIF among the variables is IF which is 2.278. Further, Pallant (2010) suggested

that the correlation matrix should be checked in order to identity the existence multicollinearity in the model and the correlation matrix of Islamic banks in Malaysia is presented in the Table 4.4.

Based on Table 4.4, the highest correlation coefficient is between UNR and GDP, which is 0.649. However this value is below 9.0, which is according to Pallant (2010), 0.90 is the benchmark to identify multicollinearity problem.

Table 4.4

Correlation Matrix for Islamic Banks in Malaysia.

	Z-Score	LIQR	PROFIT	AQR	CAP	GDP	INF	UNR	M2
Z-Score	1								
LIQR	0.037	1							
PROFIT	-0.078	0.137	1						
AQR	0.041	-.243**	-.375**	1					
CAP	-0.093	-.216*	-.481**	.560**	1				
GDP	-0.028	0.117	0.008	-0.113	-0.029	1			
INF	-0.033	0.083	-0.103	-.206*	-0.021	.397**	1		
UNR	0.058	-0.083	-0.087	0.16	0.097	-.649**	-0.067	1	
M2	0	-0.011	0.152	0.085	-0.038	-0.063	-.641**	-.268**	1

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

Table4.5

Multicollinearity Diagnostic Test for Conventional banks in Malaysia.

Variables	Tolerance Value	VIF
Liquidity Ratio	0.976	1.025
Profitability	0.699	1.430
Asset Quality Ratio	0.781	1.280
Capital Ratio	0.732	1.367
Gross Domestic Product	0.431	2.318
Inflation Rate	0.416	2.401
Unemployment Rate	0.440	2.271
Money Supply	0.465	2.149

Table 4.5 shows no evidence of multicollinearity problem exists in the model for Conventional banks in Malaysia as all variables have VIF less than 9.0. The highest VIF among the variables is INF, which are 2.401. For further verification, correlation matrix of Conventional banks in Malaysia is presented in the Table 4.6.

Table 4.6 shows that the highest correlation coefficient is between UNR and GDP, which is 0.652. However this values is below 9.0, which is according to Pallant (2010) does not exceed the threshold of multicollinearity problem.

Table 4.6

Correlation Matrix for Conventional Banks in Malaysia.

	Z-Score	LIQR	PROFIT	AQR	CAP	GDP	INF	UNR	M2
Z-Score	1								
LIQR	-0.118	1							
PROFIT	-.298**	0.042	1						
AQR	-0.061	-0.035	-.382**	1					
CAP	.254**	-0.01	-.570**	0.099	1				
GDP	0.034	0.082	-0.014	0.01	0.046	1			
INF	.163*	0.08	-.148*	-0.043	0.029	.393**	1		
UNR	0.068	-0.104	0.051	-0.06	-0.042	-.652**	-0.069	1	
M2	-(133	0.012	162*	0.103	0.078	-0.056	-.639**	-.276**	1

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

4.3 Normality Test

Normality test is to ensure that the data and variables are normally or not normally distributed. The assumption of normality is confirmed by employing the Skewness (±2.58) and Kurtosis (±2.58). The Z value are used to further check the normality and calculated by dividing Statistic over Standard Error of Skewness and Kurtosis respectively and compared to a specific critical value. Hair et al (2010) suggested that critical value at ± 2.58 (0.01 significant level) and ± 1.96 (0.05 significant level) are widely used in the studies. Table 4.7 for Islamic banks and Table 4.8 for Conventional banks in Malaysia presented Z value of each of variables in this study. Table 4.7 presented the Z values for the variables of Islamic banks in this study and it is found out that majority of the Z values for skewness and kurtosis exceeded the specific critical value except for INF and UNR. Thus, the distributions of the data for Islamic banks in Malaysia are not normal.

Table4.7

Skewness and Kurtosis Test for Islamic banks in Malaysia.

	Skewness			Kurtosis			
Variables	**Statistic**	**Std. Error**	**Z Value**	**Statistic**	**Std. Error**	**Z Value**	**Normal**
FS	1.847	.203	9.099	3.749	.403	9.3027	X
LIQR	.943	.220	4.286	1.149	.437	2.6293	X
PROFIT	-.977	.203	-4.8128	4.682	.403	11.6179	X
AQR	2.472	.203	12.1773	6.399	.403	15.8784	X
CAP	1.659	.203	8.1724	2.051	.403	5.0893	X
GDP	-1.895	.203	-9.3349	2.754	.403	6.8337	X
INF	.201	.203	0.9901	-1.098	.403	-2.7246	√
UNR	.571	.203	2.8121	-.625	.403	-1.5509	√
M2	.900	.203	4.4335	.649	.403	1.6104	X

Note: X = not normal, √=normal

Hair et al (2010) and Pallant (2010) stated that when number of observations are more than 30, it can be considered as a large sample size while Gujarati & Porter (2010) defined large sample size is when the observations are more than 100. Since the sample size of this study for Islamic banks is considered large (N=121), the violation of normality assumption is not a serious problem. According to Gujarati & Porter (2010), the normality assumption for large data does not assume a critical role and it can be relaxed. Meanwhile, suggested that violation of normality assumption may not cause any major problem in a large sample size.

Thus, based on the above definitions of large sample size, the sample size of this study is considered large and normality assumption can be relaxed. Hence, GLS was used instead of OLS. Table 4.8 presented the Z values for the variables of Conventional banks

in this study and it is found that all of the Z values for skewness and kurtosis are exceeded the specific critical value. Thus, the distributions of the data for Conventional banks in Malaysia are also not normal.

Table 4.8

Skewness and Kurtosis Test for Conventional banks in Malaysia.

	Skewness			Kurtosis			
Variables	**Statistic**	**Std. Error**	**Z Value**	**Statistic**	**Std. Error**	**Z Value**	**Normal**
FS	6.699	.174	38.5	52.899	.346	152.8873	X
LIQR	4.516	.189	23.8942	20.101	.376	53.4601	X
PROFIT	-1.337	.174	-7.6839	2.881	.346	8.3266	X
AQR	7.094	.178	39.8539	55.213	.355	155.5296	X
CAP	4.026	.170	23.6823	19.461	.339	57.4071	X
GDP	-1.885	.166	-11.3554	2.694	.331	8.1390	X
INF	.225	.166	1.3554	-1.082	.331	-3.2689	X
UNR	.584	.166	3.5181	-.620	.331	-1.8731	X
M2	.878	.166	5.2892	.512	.331	1.5468	X

Note: X = not normal, √ = normal

Furthermore, Generalized Least Square (GLS) is used as multiple regression analysis for this study since the data is not normally distributed. According to Gujarati & Porter (2010), GLS method of estimation helps to address the issue of non-normality distribution of variables that due to the existence of heteroskedasticity. They further revealed that GLS estimation is used to correct the problems which are affecting this

study model such as heteroskedasticity and auto-correlation. Hence, the normality issue was addressed using GLS method.

4.4 Diagnostic Test

The result of the homoscedasticity test, auto-correlation test and panel data test is conducted and the result is presented in the Table 4.9 below:

Table 4. 9

Diagnostic Test for Islamic banks and Conventional banks in Malaysia.

Test	Islamic Banks (Prob. Chi-Square)	Conventional Banks (Prob. Chi-Square)
Homoscedasticity/Heteroskedasticity Test	0.5938	0.9647
Auto-correlation Test	0.0000**	0.0000**
Panel Data Test (Hausman Test)	0.0000**	0.0000**

Note: *p<0.05, **p<0.01

4.4.1 Homoscedasticity Test

In testing for heteroscedasticity problem, the White test is used to test whether error term have constant variance for all levels of independent variables. The result in 4.9 shows Islamic banks model is found to be not significant at $p < 0.10$. Therefore, result failed to reject the null hypothesis and concluded that there is no heteroscedasticity problem in the model of Islamic banks in Malaysia.

Similarly, the result for Conventional banks is significant at $p < 0.10$. Hence, result failed to reject the null hypothesis and concluded that there is no heteroscedasticity problem in the model of Conventional banks in Malaysia.

4.4.2 Auto-correlation Test

In order to test whether the error term is serially independent or not, the Breusch-Godfrey Serial Correlation LM is used. The result of the test presented in Table 4.9 for the Islamic banks shows autocorrelation problem since it was found to be significant at $p>0.01$. Meanwhile the result for the Conventional banks also found to be significant at $p>0.01$ which indicates that there is autocorrelation problem in this model. Therefore, the results rejected the null hypothesis which mean that the data used are not serially independent for the error term (have autocorrelation problem).

4.4.4 Panel Data Test

According to Gujarati & Porter (2010), the Hausman test is employed to decide between fixed or random effects and most suitable for the model in this study. Table 4.9 shows the result for Islamic banks and the Hausman test with chi-square score is 0.0000 ($p<0.01$) which meet the asymptotic assumption so reject the null hypothesis, it is conclued that the fixed effect is selected for this study. Meanwhile, the result for Conventional banks and the Hausman test with chi-squares score is 0.0000 ($p>0.01$). the data meet the asymptotic assumptions and accept the null hypothesis. It is concluded that fixed effects model is most appropriate and selected for this study.

4.5 Multiple Regression Analysis

The multiple regression analysis is performed using EVIEWS8 software to determine the projecting influence of independent variables (LIQR, PROFIT, AQR, CAP, GDP, INF, UNR, & M2) on dependent variable (FS). The result of multiple regression analysis for Islamic banks in Malaysia is presented in the Table 4.10 and Conventional banks in the Table 4.12, respectively. The beta coefficient value (β) shows the contribution of each independent variable to the dependent variable.

Table 4.10

Bank-Specific and Macroeconomic Factors on Financial Stability of Islamic banks in Malaysia.

Variable	Expected signs	Beta Coefficient	t-statistics	p-value
LIQR	+	-0.0125	-0.8200	0.4142
PROFIT	+	0.3898	0.8431	0.4012
AQR	+	-0.0822	-1.0268	0.3070
CAP	+	5.2885	21.9868	0.0000***
GDP	+	-0.0833	-2.4830	0.0147**
INF	+	-0.0235	-1.1837	0.2394
UNR	+	-0.4734	-0.7844	0.4347
M2	+	-0.0311	-0.9824	0.3283
R^2		0.9915		
Adjusted R_2		0.9896		
F-Statistics		517.4820		
Sig F-Statistics		0.0000		
N		121		

Note: *p<0.10, **p<0.05, ***p<0.01

The results of the multiple regression for Islamic banks in Malaysia is presented in the Table 4.10. The F-statistic that explains the overall significance of the model is found to be significant at 0.0000 levels with adjusted R-square of 0.9896. It shows that regression model consisting LIQR, PROFIT, AQR, CAP, GDP, INF, UNR, and M2 could explain 98.96 percent variation in FS. Furthermore, the predictors from bank-specific variables, such as, gross domestic product (GDP), inflation rate (INF), unemployment rate (UNR), and money supply (M2) are insignificant except for gross domestic product (GDP). Meanwhile, there are only one predictors from bank-specific variables which are found to be significant with financial stability (FS) which is capital ratio (CAP). Other predictors such as liquidity ratio (LIQR), profitability (PROFIT), and asset quality ratio (AQR) have no impact on financial stability (FS) of Islamic banks in Malaysia which is not supporting the hypotheses. Detail of the result is presented in Appendix III.

4.5.1 Bank-Specific Variables for Islamic Banks

The result of these variables are discussed in the following sections.

(i) **Liquidity Ratio (LIQR)**

The coefficient estimation of liquidity ratio is -0.0125 with t-value of -0.8200 ($p > 0.10$). This result indicates that a 0.0125 unit decrease in liquidity ratio, result an increase of 1 unit in financial stability of Islamic banks in Malaysia. Although the result is not significant, it shows that there is a negative relationship between liquidity ratio and financial stability which indicates that when the higher the

liquidity, the lower the profitability. Since liquidity ratio is insignificant, the result fails to reject the null hypothesis H_{01}.

(ii) Profitability (PROFIT)

The coefficient estimation of profitability is 0.3898 with t-value of 0.8431 ($p > 0.10$). This result indicates that a 0.3898 unit increase in profitability, result in an increase of 1 unit in financial stability of Islamic banks in Malaysia. Although the result is not significant, it shows that there is a positive relationship between profitability and financial stability which indicates that financial stability of banks increase when the profitability of banks increase. Since PROFIT is insignificant, the result fails to reject the null hypothesis H_{02}.

(iii) Asset Quality Ratio (AQR)

The coefficient estimation of asset quality ratio is -0.0822 with t-value of 1.0268 ($p > 0.10$). This result indicated that a 0.0822 unit decrease in asset quality ratio resulted of 1 unit increase in financial stability of Islamic banks in Malaysia. Although the result is not significant, it shows that there is a negative relationship between asset quality ratio and financial stability, which suggests that when there is an increase in asset quality ratio of Islamic banks, will results in reducing its level of stability. Since AQR shows an insignificant impact on financial stability, the result fails to reject the null hypothesis H_{03}.

(ii) Inflation Rate (INF)

The coefficient estimation of inflation rate is -0.0235 with t-value of -1.1837 ($p > 0.10$). This result indicates that a 0.0235 unit decrease in inflation, result in an increase of 1 unit in financial stability of Islamic banks in Malaysia. The result shows that there is a negative and insignificant relationship between inflation rate and financial stability, which suggests that during low inflation rate, financial stability of Islamic banks in Malaysia is increasing. Since INF is insignificant, the result fails to reject null hypothesis H_{06}.

(iii) Unemployment Rate (UNR)

The coefficient estimation of unemployment rate is -0.4734 with t-value of -0.7844 ($p > 0.10$). This result indicates that a 0.4734 unit decrease, result in an increase of 1 unit in financial stability of Islamic banks in Malaysia. Although the result is not significant, there is a negative relationship between unemployment rate and financial stability which indicates that when the total of unemployment rate is high, the stability of Islamic banks would be increasing. Since UNR is not significant, the result fails to reject null hypothesis H_{07}.

(iv) Money Supply (M2)

The coefficient estimation of money supply is -0.0311 with t-value of -0.9824 ($p > 0.10$). This result indicates that a 0.0311 unit decrease in money supply, result in an increase of 1 unit in financial stability of Islamic banks in Malaysia. Although the result is not significant, it shows that there is a negative

relationship between money supply and financial stability which indicates that when stability of Islamic banks are increase, the total amount of money in a country is at low level. Since M2 is insignificant, the result fails to reject null hypothesis H_{08}.

4.5.3 The Summary of the Result of the Relationship between Independent Variables and the Financial Stability of Islamic Banks in Malaysia

To summarize the results regarding the hypotheses related to the predictive power of bank-specific variables and macroeconomic factors towards the financial stability of Islamic banks in Malaysia, it can be concluded that the given hypotheses H_4 and H_5 are significant. From Section 4.5.I, only one (1) bank-specific variable is significant, while Section 4.5.2 also shows only one (1) macroeconomic factors significantly influences financial stability of Islamic banks in Malaysia. The summarization of predictor coefficient test regression presented in the Table 4.11.

Table 4.11

Summary of Multiple Regression Result of Bank-Specific and Macroeconomic Factors on Financial Stability for Islamic Banks in Malaysia

Independent Variables	Expected Sign	FS
LIQR	+	Insignificant (-)
PROFIT	+	Insignificant (+)
AQR	+	Insignificant(-)
CAP	+	**Significant (+)**
GDP	+	**Significant(-)**
INF	+	Insignificant(-)
UNR	+	Insignificant (-)
M2	+	Insignificant(-)

Table 4.12

Bank-Specific and Macroeconomic Factors on Financial Stability of Conventional banks in Malaysia.

Variable	Expected signs	Beta Coefficient	t-statistics	p-value
LIQR	+	0.0007	0.1465	0.8838
PROFIT	+	-1.7151	-1.7235	0.0872*
AQR	+	-0.8821	-3.4093	0.0009***
CAP	+	4.1460	19.8216	0.0000***
GDP	+	0.2382	3.8516	0.0002***
INF	+	0.0779	3.3799	0.0010***
UNR	+	3.2886	3.4931	0.0007***
M2	+	0.0182	0.3015	0.7635
R^2		0.9946		
Adjusted R^2		0.9935		
F-Statistics		911.2884		
Sig F-Statistics		0.0000		
N		155		

Note. *p<0.10, **p<0.05, ***p<0.01

Table 4.12 shows the result of the multiple regressions for Conventional banks in Malaysia. The F-statistics that explains the overall significance of the model is found to be significant at 0.0000 levels with adjusted R-square of 0.9935. The adjusted R-square ($R^{2)}$ for this study shows that regression model consisting of LIQR, PROFIT, AQR, CAP, GDP, INF, UNR and M2 could explain 99.35 percent variation in FS. There are three predictors from bank-specific variables which are significant, that is profitability (PROFIT), asset quality ratio (AQR), and capital ratio (CAP) while there are also three predictors from macroeconomic factors which are significant, that is gross domestic product (GDP), inflation rate (INF), unemployment rate (UNR). Other predictors such as liquidity ratio (LIQR) and money supply (M2) have no significant impact on FS of Conventional banks in Malaysia. Detail of the result is presented in Appendix IV.

4.5.4 Bank-Specific Variables for Conventional Banks

A bank-specific variable is the first group of independent variables and consists of four variables and four hypotheses. The results of these variables are discussed in the following paragraphs.

(i) Liquidity Ratio (LIQR)

The coefficient estimation of LIQR is 0.0007 with t-value of 0.1465 ($p > 0.10$). This result indicates that a 0.0007 unit increase in LIQR, result in an increase of 1 unit in financial stability of Conventional banks in Malaysia. Although the result is not significant, it shows that there is a positive relationship between

liquidity and financial stability which reveals that banks with higher liquidity incur a more stable of banks. Since LIQR is not significant, the result fails to reject null hypothesis H_{01}.

(ii) Profitability (PROFIT)

The coefficient estimation of profitability is -1.7151 with t-value of -1.7235 ($p < 0.10$). This result indicates that a 1.7151 unit decrease in profitability, result in an increase of 1 unit in financial stability of Conventional banks in Malaysia. The result is negative and significantly related between profitability and financial stability of Conventional banks in Malaysia, which shows that increase in financial stability, would lead to lower the profit of the conventional banks. Since PROFIT is significant, the null hypothesis H_{02} is rejected.

(iii) Asset Quality Ratio (AQR)

The coefficient estimation of asset quality ratio is -0.8821 with t-value of -3.4093 ($p < 0.01$). This result indicates that a 0.8821 unit decrease in asset quality, result in an increase of 1 unit in financial stability of Conventional banks in Malaysia. The result shows a negative and significant relationship between asset quality ratio and financial stability, which shows that the higher the non-performing loans (NPLs), the less stable of the banks. Since AQR is significant, the null hypothesis H_{03} is rejected.

(iv) Capital Ratio (CAP)

The coefficient estimation of capital ratio is 4.1460 with t-value of 19.8216 ($p < 0.01$). This result indicates that a 4.1460 unit increase in capital, result in an increase of 1 unit in financial stability of Conventional banks in Malaysia. The result shows a positive and significant relationship between capital ratio and financial stability, which indicates that higher capitalization of banks, would increase the stability of banks. Since CAP is significant, the null hypothesis H_{04} is rejected.

4.5.5 Macroeconomic Factors for Islamic Banks

A macroeconomic factor is the second group of independent variables and consists of four variables and four hypotheses. The results of these variables are discussed in the following paragraphs.

(i) Gross Domestic Product (GDP)

The coefficient estimation of GDP is 0.2382 with t-value of 3.8516 8216 ($p < 0.01$). This result indicate that a 0.2382 unit increase in GDP, result in an increase of 1 unit in financial stability of Conventional banks in Malaysia. The result is positively and significantly related between gross domestic product and financial stability, which suggests that higher economic growth, it is incur higher stability of conventional banks. Since GDP is significant, the null hypothesis H_{05} is rejected.

(ii) Inflation Rate (INF)

The coefficient estimation of inflation rate is 0.0779 with t-value of 3.3799 ($p < 0.01$). This result indicates that a 0.0779 increase in inflation, result in an increase of 1 unit in financial stability of Conventional banks in Malaysia. The result found that there is a positive and significant relationship between inflation rate and financial stability, which implies that in higher inflation rate, there bound to be higher stability of banks. Since INF is significant, the null hypothesis H_{06} is rejected.

(iii) Unemployment Rate (UNR)

The coefficient estimation of unemployment rate is 3.2886 with t-value of 3.4931 ($p < 0.01$). This result indicates that a 3.2886 unit increase in unemployment rate, result in an increase of 1 unit in financial stability of Conventional banks in Malaysia. The result is positively and significantly related between unemployment rate and financial stability, which implies that increase in unemployment rate, would lead to lower profit of the banks. Since UNR is significant, the null hypothesis H_{07} is rejected.

(iv) Money Supply (M2)

The coefficient estimation of money supply is 0.0182 with t-value of 0.3015 ($p > 0.10$). This result indicates that a 0.0182 unit increase in money supply, result in an increase of 1 unit in financial stability of Conventional banks in Malaysia. Although the result is not significant, it shows that the positive relationship

between M2 and financial stability appears to suggest that when the amount of money in the country is high, the financial stability of banks would also increase. Since M2 is insignificant, the result fails to reject the null hypothesis H_{08}.

4.5.6 The Summary of the Result of the Relationship between Independent Variables and the Financial Stability of Conventional Banks in Malaysia

To summarize the results regarding the hypotheses related to the predictive power of bank-specific variables and macroeconomic factors towards the financial stability of Conventional banks in Malaysia, it can be concluded that the given hypotheses H_2, H_3, H_4, H_5, H_6 and H_7 are significant. Section 4.5.4 shows that there is three influence of bank-specific variables on financial stability of Conventional banks in Malaysia. MeanWhile, Section 4.5.5 also shows three macroeconomic factors are significantly influence financial stability of Conventional banks in Malaysia. The summarization of predictor coefficient test regression is presented in the Table 4.13.

Table 4.13

Summary of Multiple Regression Result of Bank-Specific and Macroeconomic Factors on Financial Stability for Conventional Banks in Malaysia

Independent Variables	Expected Sign	FS
LIQR	+	Insignificant(+)
PROFIT	+	**Significant (-)**
AQR	+	**Significant(-)**
CAP	+	**Significant (+)**
GDP	+	**Significant(+)**
INF	+	**Significant(+)**
UNR	+	**Significant(+)**
M2	+	Insignificant(+)

4.6 Discussion on the Results

The comparative analysis between Islamic banks and Conventional banks in Malaysia and the summary of the results obtained from the multiple regression of Islamic banks and Conventional banks in Malaysia are presented in Table 4.14 and Table 4.15.

Based on the Table 4.14, the independent variables have greater impact on financial stability of Conventional banks (R^2=0.9946) compared to Islamic banks (R^2=0.9915). In other words, the management of Conventional banks in Malaysia is encouraged to consider the impacts of these variables since they contribute 99.46 percent of their banks' financial stability, particularly PROFIT, AQR, CAP, GDP, INF, and UNR.

In contrast, the independent variables collectively only explain 99.15 percent of the variation in financial stability of Islamic banks in Malaysia. There are only two variables (CAP and GDP) which have significant impact on financial stability (at 1 percent and 5 percent respectively). However, the R^2 still indicate that most of the variables used are important to Islamic banks in Malaysia since it could explain more than 90 percent of variation in financial stability in Islamic banks of Malaysia.

Table 4.14

Summary Result of Bank-Specific and Macroeconomic Factors on Financial Stability of Islamic Banks and Conventional Banks in Malaysia.

	Islamic banks		Conventional banks	
Variable	**β**	**p-valne**	**β**	**p-value**
LIQR	-0.0125	0.4142	0.0007	0.8838
PROFIT	0.3898	0.4012	-1.7151	0.0872*
AQR	-0.0822	0.3070	-0.8821	0.0009***
CAP	5.2885	0.0000***	4.1460	0.0000***
GDP	-0.0833	0.0147**	0.2382	0.0002***
INF	-0.0235	0.2394	0.0779	0.0010***
UNR	-0.4734	0.4347	3.2886	0.0007***
M2	-0.0311	0.3283	0.0182	0.7635
R^2	0.9915		0.9946	
Adjusted R_2	0.9896		0.9935	
F-Statistics	517.4820		911.2884	
Sig F-Statistics	0.0000		0.0000	
N	121		155	

Note: *p<0.10, **p<0.05, ***p<0.01

Table4.15

Summary of Results Based on Hypotheses.

Independent Variables	Hypothesized Relationship	Dependent Variable (FS)	
		Islamic Banks	Conventional Banks
LIQR	+	Insignificant(-)	Insignificant(+)
PROFIT	+	Insignificant (+)	Significant(-)
AQR	+	Insignificant (-)	Significant(-)
CAP	+	Significant(+)	Significant (+)
GDP	+	Significant(-)	Significant(+)
INF	+	Insignificant(-)	Significant (+)
UNR	+	Insignificant(-)	Significant(+)
M2	+	Insignificant (-)	Insignificant(+)

4.6.1 Relationship between Bank-Specific Variables and the Financial Stability of Islamic Banks and Conventional Banks in Malaysia

4.6.1.1 Liquidity Ratio (LIQR)

Both Islamic banks and Conventional banks reported an insignificant relationship between liquidity ratio and financial stability. This result for Islamic banks in this study is consistent with Lassoued (2018); whereby there is no significant relationship between financial stability and liquidity ratio. The Conventional banks' result is also consistent with Korbi & Bougatef(2017). This result appear to suggest that Islamic banks does not need to have a higher reserves as their Shariah-compliant short-term funds still able to protect themselves from unexpected shocks under the profit-and-loss model.

The positive influence between liquidity ratio and financial stability of conventional banks suggest that they need to maintain their liquidity reserves efficiently and must be in accordance with BNM reserve requirements in order to maintain their stability.

4.6.1.2 Profitability (PROFIT)

The positive result of PROFIT on financial stability ofIslamic banks in Malaysia shows that Islamic banks with higher profits, are more stable than banks with low profits. The result however, was not significant as a predictor of financial stability of Islamic banks. The result is consistent with the study done by Wahid

& Dar (2016), revealed that Islamic banks' profitability has no impact on banks' stability.

As for Conventional banks, there is a negative and significant relationship between profitability and financial stability. This result indicates that conventional banks engaged in high risk-taking operations while seeking for higher profits.

4.6.1.3 Asset Quality Ratio (AQR)

There is insignificant relationship was found between asset quality ratio and Islamic banks' stability. This result is consistent with the finding of Chakroun & Gallali (2015) which examined the impact of both internal and external factors on Islamic and conventional banks in Gulf countries. A similar finding was found from this study that there is a significant relationship between asset quality ratio and financial stability of conventional banks in Malaysia. This relationship is explained when the non-performing loans are increasing, it could negatively affects the stability of conventional banks.

4.6.1.4 Capital Ratio (CAP)

There is a positive and significant relationship between capital ratio and financial stability of Islamic banks as well as Conventional banks in Malaysia. This result

is consistent with Wahid & Dar (2016) who studied in Malaysia for both Islamic and Conventional banks; there is a positive and significant relationship between capital ratio and profitability of banks. The results is as expected since a high level of capitalization would increase the level of stability. This result also implied that a strong capitalized banks shows the ability of a bank to remain stable even during unstable economy period and also able to gain customers' confidence. The result is also can be supported with the study done by Korbi & Bougatef (2017) and Lassoued (2018).

4.6.2 Relationship between Macroeconomic Factors and the Financial Stability of Islamic Banks and Conventional Banks in Malaysia

4.6.2.1 Gross Domestic Product (GDP)

Both Islamic banks and Conventional banks in Malaysia reported a significant relationship between gross domestic product (GDP) and financial stability. The result indicates that stability of banks increases during good economic conditions, thus the risk of default from customers would be lower. This result is supported by Rahim, Hassan, & Zakaria (2012) as the result indicated that the banks would have a higher stability when the GDP is high, hence the risk of default would be lower.

4.6.2.2 Inflation Rate (INF)

Inflation shows an insignificant impact on financial stability of Islamic banks in Malaysia but it is significant at 1 percent for conventional banks in Malaysia. The result for Islamic banks supports past finding ofLassoued (2018) and Wahid & Dar (2016) which examined Islamic banks in Malaysia. Theoretically, Islamic banking system are negatively affected by macroeconomic activities because it is strongly linked to the real economy (Chakroun & Gallali, 2015).

Meanwhile, the result for conventional banks supports Korbi & Bougatef (2017), where it was found that there is a significant impact of inflation rate towards conventional banks' stability. This is because even during inflation periods, conventional banks still able to maintain their stability as they have been able to expect future inflation rate.

4.6.2.3 Unemployment Rate (UNR)

There is an insignificant relationship between unemployment rate and financial stability of Islamic banks in Malaysia. Meanwhile, a significant relationship was found between unemployment rate and financial stability of conventional banks in Malaysia. This relationship found in conventional banks supports a study done by Kisel'áková & Kisel'ák (2013) and Heffernan & Fu (2008) that unemployment rate has a significant impact on financial stability of banks. They further revealed that unemployment rate could cause to a higher loan default by customers since

the customers' ability to pay the loans would be lower. It would cause the profitability of banks also would be decreasing. Hence, the stability of conventional banks would be decreasing as well.

4.6.2.4 Money Supply (M2)

Both Islamic banks and conventional banks in Malaysia reported an insignificant relationship between Money supply and financial stability of banks. The result supported by Chakroun & Gallali (2015) as money supply had no significant effect on bank stability. The negative influence found in Islamic banks can be confirmed by Aggregate Macroeconomic Model theory that Islamic banking system are negatively affected by macroeconomic activities because it is strongly linked to the real economy.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This study aims to examine the impact of bank-specific and macroeconomic factors on financial stability of Islamic and conventional banks in Malaysia. There are total of sixteen (16) Islamic banks and twenty-four (24) Conventional banks in Malaysia. The objective of this chapter is to discuss more about the result that has been derived from the analysis of findings in Section 5.1. This chapter also highlights the contribution of the study in Section 5.2. Meanwhile, Section 5.3 provides the recommendations as guideline for the future researchers who might interested on this particular topic.

5.1 Recapitulation of findings

To recapitulate, the findings are presented based on the sequence of the two research objectives as follows:

5.1.1 Objective One

To examine the impact of bank-specific variables with financial stability of Conventional banks and Islamic banks over the period 2009 to 2017. The result is presented in Table 4.14.

The regression analysis reveals that liquidity ratio is negatively and insignificantly related to both financial stability of Islamic banks and conventional banks in Malaysia. The result for conventional banks shows a positive and also insignificant relationship between liquidity ratio and financial stability. This result is supported study done by Korbi & Bougatef (2017) and Lassoued (2018). This result implies that the Islamic banks in Malaysia have the minimum effect on having enormous reserve as the implementation of PLS model has the ability to transfer their losses to their depositors. Since there is a positive relationship between liquidity ratio and financial stability of conventional banks, they need to have a higher level of liquidity to able to maintain their stability.

The profitability is shown to be insignificantly related to financial stability for Islamic banks but has a negatively and significantly relationship for conventional banks in Malaysia. The results indicated that increases in financial stability lowers profitability for conventional banks in Malaysia, hence they need to improve their earnings and profitability.

This study finds that asset quality ratio is negatively but insignificant relationship to financial stability of Islamic banks in Malaysia. Meanwile, the result for conventional banks shows a negative and significant relationship between asset quality ratio and financial stability. The result of conventional banks indicated that the cash flow of

conventional banks could have complications and it bring affects the banks' liquidity. Hence, the banks would be exposed to risky situation.

As for capital ratio, the multiple regression result for both Islamic and conventional banks shows that there is a significantly and positively relationship to financial stability. The result indicate that both Islamic banks and conventional banks need to increase their level of capitalization since the equity and total assets indicates a positive impact on banks' stability. The positive relationship also implies that both banks need to hold at least 8 percent of capital adequacy as required from BNM.

5.1.2 Objective Two

To examine the impact of macroeconomic factors with financial stability in Conventional banks and Islamic banks over the period 2009 to 2017. The result is presented in Table 4.14.

Regarding to macroeconomic factors, gross domestic product (GDP) shows a significant relationship with the financial stability of Islamic banks and conventional banks in Malaysia. These result was supported by Rahim, Hassan, & Zakaria (2012), Korbi & Bougatef (2017) and Rajhi & A.Hassairi (2013). The result indicated that GDP is significant determinant and may contribute to an increase in financial stability for Malaysian banking system.

Inflation on the other hand is insignifcantly related to financial stability of Islamic banks, while inflation has a significant effect on conventional banks in Malaysia. The result indicated that conventional banks could have the ability to expect future inflation. The difference of these findings could be further explained by the fact that conventional banks utilized the interest rates in their system and this system take inflation into account unlike Islamic banks as it is based on real assets and equity contracts. The results of conventional banks consistent with result in Korbi & Bougatef (2017).

Both unemployment rate and money supply showed insignificant relationship with financial stability of Islamic banks in Malaysia. The negative relationships found in these findings indicated that Islamic banks are not directly affected by the macroeconomic activities as its banking system is based on real economy and Profit and Loss sharing model. While conventional banks showed a significant relationship with unemployment rate and insignificant relationship on its financial stability. The relationship between unemployment rate and financial stability of conventional banks implied that the decreasing ability of clients to pay loans could positively affected banks' profitability. Hence, the government has to control the unemployment rate in Malaysia as it could bring lower profitability of conventional banks.

As a summary, only one variable from each bank-specific variables and macroeconomic factors are significant determinants of financial stability in Islamic banks in Malaysia which are CAP and GDP. MeanWhile, there are three bank-specific variables and also

three macroeconomic factors which are significant determinants of financial stability for conventional banks in Malaysia. There are PROFIT, AQR, CAP, GDP, INF and UNR. Adjusted R^2 for Conventional banks model is 0.9946 (99.46 percent) as compared to Islamic banks which is 0.9915 (99.15 percent).

5.2 Contribution of the Study

This study examines factors influencing the financial stability of Islamic banks and conventional banks in Malaysia which is very crucial for the banks to be aware of the both internal and external variables that could bring significant impacts on their stability of banks in order to survive in this industry. Past studies have studied the relationship between financial stability and internal and external factors Rashid, Yousaf, & Khalleequzzaman (2017), Rajhi & A.Hassairi (2013), and Abrar, Ahmed, & Kahfi (2018). However, the review of the literature also shows that there are limited studies of financial stability and its relationship with internal and external factors in Malaysia as compared to other countries such as MENA countries and Gulf countries. Hence, this study contribute in the following ways:

i. It has widened the scope of analysis on financial stability done by Lassoued (2018) by comparing both conventional banks and Islamic banks' in terms of financial stability with its relationship to bank-specific variables and macroeconomic factors in Malaysia. Since the comparison studies between internal and external factors with financial stability in Malaysian banking

sector are limited, this study contributed to the literature by introducing new macroeconomic variables which are unemployment rate and money supply in order to know its relationship with financial stability of banks.

ii. This study also contributes by proving that Islamic banks are not positively affected by macroeconomic activities as all the macroeconomic variables used in this study shows negative relationship with financial stability of Islamic bank. These findings were consistent with the theory of Aggregate Macroeconomic Model that stated Islamic banking system is negatively impact by any economic activities than its conventional counterparts due to the equity and participation model that implemented by Islamic banks.

iii. The comparison between Islamic banks and conventional banks in Malaysia also highlight significant differences. For instance, the results from the analysis of bank-specific variables and macroeconomic factors for both Islamic and conventional banks in Malaysia over the period 2009 to 2017. Based on the results, two variables are significant for Islamic banks which are CAP and GDP. Meanwhile, for conventional banks, there are six significant variables which are PROFIT, AQR, CAP, GDP, INF and UNR. The insignificant relationship of INF, UNR and M2 with the financial stability of Islamic banks is in accordance with the theory from Khan (1986). This is because the Profit Loss Sharing (PLS) business model practiced by Islamic banks have the ability to withstand from any economy crisis. As for

conventional banks, since they are practicing interest rate in their business model, they are highly affected with GDP, INF, and UNR.

5.3 Suggestion for the Future Research

Pursuant to the present study, several inputs for future research to be undertaken are suggested as follows:

First, financial stability of Islamic and conventional banks is one of the important issues that have been debated arising from the global financial crisis. Islamic banks place an essential role as intermediation parties that contribute to financial stability in their business and become a continuous issue. However, there are very limited empirical studies on Islamic banks which can be found. Thus, it is suggested that more research to be conducted to identify the determinants of financial stability of Islamic banks. The topics should not be limited to several bank-specific and macroeconomic factors only but also look at other related areas in depth such as, global crisis, Islamic perspective and legal implication but they need to be carefully in selecting the variables as it may cause the result not accurate.

Second, in order to obtain more comprehensive analysis of financial stability of Islamic and conventional banks, a longer period of study could give a more sustain and significance results for every test that could be do. Instead on analysing only on one country, a comparative study between countries or region which implementing dual-

banking system is required. Thus, it is recommended that an individual countries study is to be conducted for the purposes of comparing the results between them in order to detect country specifics.

Third, some new statistical software could be used in future studies to uncover further insights into the various operational and strategic aspects of dual-banking system, especially Islamic banking system.

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APPENDIX I

Z-score of Islamic banks in Malaysia

No.	Bank	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)	2016 (%)	2017 (%)	Average
1	Affin Islamic	52.64	49.41	39.61	48.43	49.40	52.44	61.66	65.45	75.52	54.95
2	Al Rajhi Bank	84.09	75.77	76.10	62.84	65.18	60.97	61.68	54.17	53.16	66.00
3	Alliance Islamic	23.34	20.23	16.90	19.75	19.21	18.70	15.87	18.13	19.00	19.01
4	Am Islamic	28.32	24.77	21.44	22.42	20.35	20.59	18.76	21.19	24.36	22.47
5	BIMB	29.90	45.13	47.34	45.11	42.34	44.26	43.94	42.76	46.50	43.03
6	BMMB	54.14	51.77	49.03	45.79	50.01	57.11	53.76	57.62	58.98	53.13
7	CIMB Islamic	25.20	30.52	37.24	38.23	44.98	51.28	53.00	50.55	45.97	41.89
8	HSBC Amanah	60.81	45.61	33.67	33.67	32.25	31.99	29.67	36.49	35.59	37.80
9	Hong Leong Islamic	44.57	45.30	39.02	29.30	34.73	39.26	39.12	39.06	39.30	38.85
10	KFH	9.34	8.45	1.35	9.15	9.29	8.88	7.26	7.00	8.73	7.72
11	MBSB	25.33	25.62	31.12	26.43	26.38	27.93	31.02	32.37	32.78	28.78
12	Maybank Islamic	55.65	55.16	41.31	37.10	38.30	39.26	39.13	37.02	34.25	41.91
13	OCBC Al-Amin	13.50	21.26	18.00	21.25	19.08	18.08	21.40	23.47	26.76	20.31
14	Public Islamic	18.34	20.89	19.58	21.00	20.00	18.43	17.10	18.95	19.16	19.27
15	RHB Islamic	139.63	131.24	102.87	115.66	121.72	109.30	99.13	106.66	104.05	114.47
16	Stand Chart Saadiq	19.20	32.14	23.35	21.97	19.81	16.66	14.70	19.24	23.43	21.17

APPENDIX II

Z-score of Conventional banks in Malaysia

No.	Bank	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)	2016 (%)	2017 (%)	Average
1	Affin Bank	51.05	48.40	44.97	48.58	47.63	53.25	55.90	55.90	72.27	53.42
2	Alliance Bank	42.19	46.12	47.21	49.54	48.57	48.57	48.46	50.10	57.47	48.39
3	Ambank	18.58	21.16	22.19	26.01	28.46	30.10	32.30	32.75	33.51	27.23
4	BNP Paribas	n.a.	n.a.	n.a.	30.19	30.78	25.52	24.84	24.11	28.33	27.29
5	Bangkok Bank	73.38	62.90	79.50	67.85	63.18	59.94	71.11	75.33	101.86	72.78
6	Bank Of America	68.23	65.34	70.94	49.82	34.28	43.96	49.43	44.80	41.96	52.08
7	Bank Of China	153.38	116.32	94.49	67.46	38.56	74.09	93.83	94.52	75.80	89.83
8	CIMB Bank	57.93	56.71	55.58	53.32	52.65	57.03	57.86	57.86	61.64	56.90
9	CitiBank	53.26	61.46	57.77	70.72	71.47	73.14	73.71	67.81	81.35	67.85
10	Deutsche Bank	24.38	26.45	26.41	30.33	28.78	37.73	28.55	33.76	43.87	31.14
11	HSBC Bank	55.54	54.92	49.32	65.07	63.68	66.46	68.69	80.04	97.53	66.81
12	Hong Leong Bank	109.25	115.19	78.30	112.08	118.14	125.71	126.83	168.19	169.29	124.77
13	India Itnl Bank	n.a.	n.a.	n.a.	189.79	150.19	149.70	152.81	148.69	159.23	158.40
14	Industrial and Commercial Bank Of China	n.a.	n.a.	n.a.	n.a.	n.a.	353.12	374.89	374.89	778.46	592.39
15	J.PMorgan Chase Bank	81.35	58.25	29.62	39.33	41.12	35.79	27.14	34.07	48.90	43.95
16	Maybank	24.31	30.96	24.21	32.53	26.00	25.97	27.07	28.77	29.54	27.71
17	Mizuho Bank	n.a.	n.a.	n.a.	n.a.	44.03	47.89	46.59	38.72	61.82	47.81
18	OCBC Bank	38.13	44.79	39.88	41.17	37.90	38.57	37.21	36.86	41.49	39.56

19	Public Bank	34.09	41.79	42.88	46.67	46.81	52.23	59.55	60.97	60.63	49.51
20	RHB Bank	36.62	38.32	38.36	33.95	36.75	35.96	36.77	43.41	47.55	38.63
21	Stand Chart Bank	13.74	14.86	17.47	18.79	18.64	19.67	20.78	24.35	27.27	19.51
22	Sumitomo Mitsui Bank	n.a.	n.a.	n.a.	64.01	74.67	54.63	26.27	37.53	26.99	47.35
23	The Bank Of Nova Scotia	37.72	43.95	39.85	n.a.	47.32	50.92	54.69	73.75	73.75	56.77
24	UOB	110.70	108.43	92.56	94.36	95.04	103.04	110.83	115.00	124.00	106.00

APPENDIX III

Diagnostic Test for Islamic banks in Malaysia

White test for Heteroscedasticity

Heteroskedasticity Test: White

F-statistic	0.889708	Prob. F(38,82)	0.6488
Obs*R-squared	35.32438	Prob. Chi-Square(38)	0.5938
Scaled explained SS	64.62456	Prob. Chi-Square(38)	0.0045

Auto-Correlation test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	114.7985	Prob. F(2,110)	0.0000
Obs*R-squared	81.80649	Prob. Chi-Square(2)	0.0000

Panel Data Test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	329.593940	(14,98)	0.0000
Cross-section Chi-square	468.629023	14	0.0000

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	13.704328	8	0.0898

Multiple Regression Analysis for Islamic banks in Malaysia

Dependent Variable: Z_SCORE
Method: Panel EGLS (Cross-section weights)
Date: 02/27/19 Time: 14:56
Sample: 1 9
Periods included: 9
Cross-sections included: 15
Total panel (unbalanced) observations: 121
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.292476	3.310366	1.296677	0.1978
LIQR	-0.012506	0.015250	-0.820076	0.4142
PROFIT	0.389828	0.462387	0.843077	0.4012
AQR	-0.082224	0.080075	-1.026837	0.3070
CAP	5.288492	0.240530	21.98682	0.0000
GDP	-0.083319	0.033557	-2.482957	0.0147
INF	-0.023515	0.019865	-1.183730	0.2394
UNR	-0.473443	0.603585	-0.784385	0.4347
M2	-0.031118	0.031676	-0.982371	0.3283

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.991465	Mean dependent var	83.47306
Adjusted R-squared	0.989549	S.D. dependent var	65.83562
S.E. of regression	3.605427	Sum squared resid	1273.912
F-statistic	517.4820	Durbin-Watson stat	1.427865
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.979815	Mean dependent var	43.31649
Sum squared resid	1584.226	Durbin-Watson stat	1.239944

APPENDIX IV

Diagnostic Test for Conventional banks in Malaysia

White test for Heteroskedasticity

Heteroskedasticity Test: White

F-statistic	0.554635	Prob. F(38,116)	0.9804
Obs*R-squared	23.83202	Prob. Chi-Square(38)	0.9647
Scaled explained SS	42.13931	Prob. Chi-Square(38)	0.2965

Auto-Correlation test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	17.93158	Prob. F(9,145)	0.0000
Obs*R-squared	81.64440	Prob. Chi-Square(9)	0.0000
Scaled explained SS	144.3620	Prob. Chi-Square(9)	0.0000

Panel Data Test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	160.389416	(18,128)	0.0000
Cross-section Chi-square	489.695839	18	0.0000

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	20.476199	8	0.0087

Multiple Regression Analysis for Conventional banks in Malaysia

Dependent Variable: Z_SCORE
Method: Panel EGLS (Cross-section weights)
Date: 02/27/19 Time: 14:59
Sample: 1 9
Periods included: 9
Cross-sections included: 19
Total panel (unbalanced) observations: 155
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.270016	3.391625	-1.258988	0.2103
LIQR	0.000676	0.004614	0.146465	0.8838
PROFIT	-1.715080	0.995116	-1.723498	0.0872
AQR	-0.882113	0.258737	-3.409307	0.0009
CAP	4.145983	0.209165	19.82158	0.0000
GDP	0.238155	0.061834	3.851555	0.0002
INF	0.077927	0.023056	3.379857	0.0010
UNR	3.288552	0.941445	3.493090	0.0007
M2	0.018161	0.060241	0.301477	0.7635

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.994627	Mean dependent var	99.20631
Adjusted R-squared	0.993535	S.D. dependent var	97.32994
S.E. of regression	5.544990	Sum squared resid	3935.604
F-statistic	911.2884	Durbin-Watson stat	1.067774
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.964707	Mean dependent var	56.64047
Sum squared resid	5476.141	Durbin-Watson stat	0.956153